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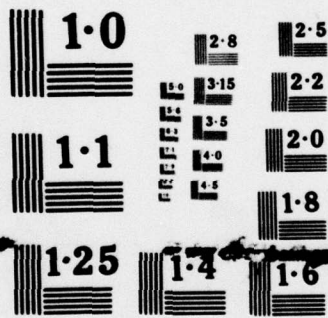
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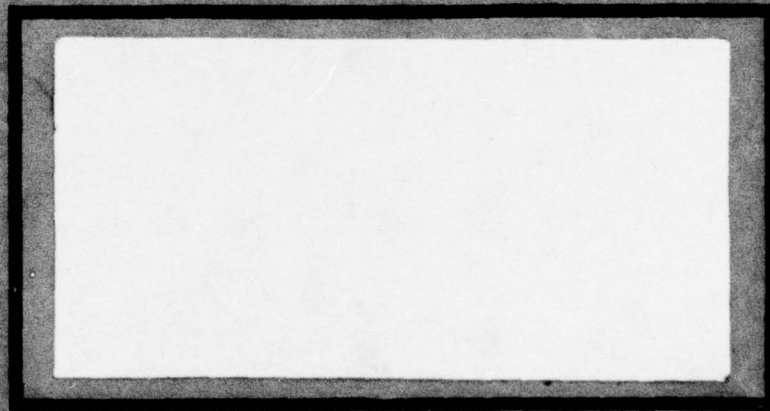
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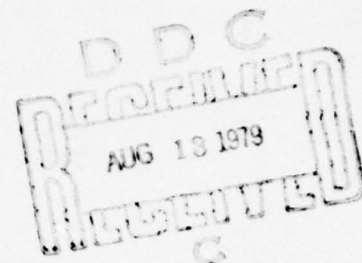


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AN ANALYSIS OF THE USEFULNESS OF
THE GRADUATE LOGISTICS PROGRAM

Kenneth R. Brown, Captain, USAF
David M. Hollingsworth, Captain, USAF

LSSR 14-79A

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2 This research involved an analysis of the usefulness of the AFIT School of Systems and Logistics. The major objective was to determine the extent to which graduates are using their logistics education in follow-on assignments. The population was limited to the opinions of those active duty Air Force officers who are graduates of the graduate management programs offered by the AFIT School of Systems and Logistics. Surveys were mailed to members of classes 1963 through 1978B. Of the 1045 surveys mailed, 845 (80.9 percent) were returned. The questionnaire was divided into four sections: demographic data, assignment/promotion information, education usefulness/job requirements, and an open-end free response question. An analysis of the responses was directed toward determining the graduates' perceptions of the School with regard to: overall usefulness, enhancing promotion chances, supervisor's attitudes, curriculum usefulness, and assignment appropriateness. Also, rated and nonrated graduates' perceptions of usefulness, as well as the perceptions of graduates of different time periods, were compared in an attempt to isolate any differences of opinion. Based on this analysis of the graduates' responses, effort was directed toward translating the findings into useful conclusions and recommendations.

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AN ANALYSIS OF THE USEFULNESS OF
THE GRADUATE LOGISTICS PROGRAM

A Thesis

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
Air University

In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Logistics Management

By

Kenneth R. Brown, BS
Captain, USAF

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June 1979

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This thesis, written by

Captain Kenneth R. Brown

and

Captain David M. Hollingsworth

has been accepted by the undersigned on behalf of the
faculty of the School of Systems and Logistics in partial
fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN LOGISTICS MANAGEMENT

DATE: 13 June 1979


COMMITTEE CHAIRMAN

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CHAPTER I

INTRODUCTION

Statement of the Problem

"Is the Air Force Institute of Technology (AFIT) at Wright-Patterson AFB, Ohio, necessary [1:7]?" This question and others are being asked of the Department of Defense by Congress in efforts to cut down on government spending. The House Committee on Appropriations commented that

In some respects graduate education has become just another ingredient in a successful officer career even though in many cases it cannot be shown that this additional training is necessary [22:23].

Thus, a continuing need exists to determine the usefulness of the graduate degree earned at the AFIT School of Systems and Logistics (18).

Background and Justification

The need for higher education in the Air Force can be traced back to the early days of powered flight when aviation technology was increasing and changing at tremendous rates. Before 1919, the Massachusetts Institute of Technology fulfilled that need. Since then, AFIT has grown to become the primary manager of the Air Force's advanced educational programs (23:3).

AFIT formally became designated the Air Force Institute of Technology in 1947 when the Air Force became a separate service (23:3). By 1958, the School of Logistics joined the already existing School of Engineering. In April 1960, the School of Engineering was accredited as a master's degree-level institution. In 1963, the School of Logistics was redesignated the School of Systems and Logistics and was given similar graduate accreditation by the North Central Association of Colleges and Schools (12:2).

The current mission of AFIT is

. . . to plan, organize, conduct, and administer degree-granting and continuing education programs in engineering, systems and logistics, civil engineering, management, medicine, and other fields . . . in response to United States Air Force and Department of Defense requirements [23:2].

In order to accomplish this mission, AFIT administrators must continually analyze the resources of higher education and assess the Air Force's educational requirements (23:2). In this respect, AFIT recognizes the importance of job-related education, education which civilian industry is now discovering its managers need but have not been getting in the past (17:81).

That the AFIT Graduate School of Systems and Logistics strives to meet job-related needs is described in its mission statement:

. . . to further professional development of selected personnel in modern management procedures, with a searching analysis of the means whereby

improvements can be made using human, material, and financial resources . . . [through] conduct [of] accredited management programs, designed to develop a cadre of managers in the fields of logistics and facilities management [9:2].

The major curriculum areas of Procurement, Facilities Management, Acquisition Logistics, International Logistics, and Logistics Management are indicative of the Systems and Logistics School's continuing effort to meet the job-related needs of the Air Force manager (9:5). To accomplish these needs, the Graduate School of Systems and Logistics strives to meet six objectives:

1. Develop a higher degree of understanding for and appreciation of the individual's role in accomplishing his organization's mission.
2. Provide a foundation for the quantitative analysis of systems and procedures.
3. Develop an improved ability to use the basic communicative arts as more effective tools of management.
4. Provide an opportunity for training and experience in the use of research theories and techniques as applied to actual military problems.
5. Apply current management principles in the existing military context.
6. Develop capability in data processing, financial management and budget controls as applied to systems and procedures [9:2-3].

Successful accomplishment of these six objectives contributes immensely to the development of knowledgeable managers, but at a cost of \$32,316 per person educated (12:99). Congress is voicing its concern over this spending, especially with the current shortage of officers in the rated career field (4:3). With the loss of these operations people, Congress questions the value of spending to

send officers through AFIT. "There is a vast amount of manpower going to graduate studies that could be used instead to better man the operational force structure [1:7]." Yet, this criticism is countered by Lieutenant General John B. McPherson in an article published in National Defense, where he equates graduate education to greater military efficiency:

Attaining higher levels of professionalism and competence by members of the military leads to better managed organizations, improved performance, and the ability to accomplish more with fewer people, resulting in greater national security and a lower defense budget [16:43].

Because of the high cost of advanced degree programs and Congressional doubt about the usefulness of such programs, the continuing need to justify AFIT's School of Systems and Logistics is a practical and important research project.

Literature Review

The problem identified for the study was a determination of the usefulness of the Graduate Logistics Program as perceived by graduates. The bulk of the research in this area has been conducted by Graduate Logistics students. Therefore, it is essential that a review of pertinent studies be made in order to become familiar with other approaches to the problem. Also, a review of literature addressing the importance of higher education to

industry will be included to illustrate its impact upon the manager now being hired by industry and the Air Force.

Theses Review

In a study conducted in 1965, Lieutenant Colonel Allen C. Hart evaluated the "utilization of the education received, the extent to which course objectives were met, and the curriculum [11:7]" of the School of Systems and Logistics. Using the hypothesis approach and the questionnaire instrument, Hart surveyed students graduating in classes 1963A through 1964B (11:7). These graduates indicated that the course objectives were adequately accomplished and that the curriculum was appropriate; however, too much emphasis was placed on the quantitative courses (11:48). In his conclusion, Hart wrote that

The Graduate Logistics Program is fulfilling the role, mission, and objectives for which it was designed. It does provide an education to selected Logisticians and will provide each student with the managerial tools, both quantitative and qualitative, necessary to solve complex logistics and weapons systems problems [11:57].

In 1968, Second Lieutenants Robert Cook and John E. Greene extended Lieutenant Colonel Hart's study and sought to determine if there existed a high positive correlation between the emphasis placed on subjects taught in the Graduate Logistics Program and the needs in the field as perceived by its graduates (3:85). They also sought to determine if the positions held by graduates of the program were commensurate with the additional education that this group

had received (3:86). Again, a questionnaire was used. Data obtained from a survey of graduates between 1965 and 1967 were used in answering the researchers' questions. The graduates felt that communicative skills received the greatest emphasis in the field and should be stressed more in the curriculum. Although Cook and Greene found that other objectives could use more emphasis in the classroom as well, they concluded overall that the School "does teach subjects which the graduates both need and use in the field [3:95]."

In 1971, Captains Jerry W. Hale and Basil E. Rooney continued studying the usefulness of the Graduate Logistics Program. They sought to determine if there existed a significant difference in the managerial performance of logistics managers who had graduated from the School of Systems and Logistics and those who had no graduate education (10:11). In order to do this, they developed a questionnaire consisting of forty dimensions of managerial performance (10:13). Hale and Rooney surveyed graduates and non-graduates, as well as supervisors of both groups. The results of the survey supported the conclusion that the performance of the graduates was superior to that of non-graduates on certain aspects of the managerial job. The aspects in which AFIT graduates excelled were decision making, performance style, planning, communication, and general evaluation (10:40). Hale and Rooney were unable to

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make a conclusion about the overall performance of graduates, however. They suggested that perhaps the selection technique used by the Program selects those candidates who are capable managers to begin with; the Program further enriches them with the graduate management instruction (10:45).

The next year, Captains Joseph Latt and Rick Harrelson studied the image of the School of Systems and Logistics as perceived by senior logistics managers. Using the questionnaire for data collection, they concluded that the School, along with its graduates, was held in high regard by the logistics managers (13:41).

In 1973, Major Phillip G. Loignan and Captain John T. Rademacher completed a student thesis concerned with curriculum objectives and whether these objectives were appropriate for subsequent operational use (15:2). They surveyed active duty Air Force officers who had graduated from the School of Systems and Logistics between 1963 and 1970. Based on the responses of 331 such graduates, Loignan and Rademacher concluded that the curriculum was appropriate, but with some overemphasis on linear programming and mathematical model building (15:87).

Captains William N. Crowder and James A. Davidson extended the research on the usefulness of the Graduate Logistics Program with their student thesis in 1978. They sought to analyze

. . . the extent to which graduates of the many USAF-sponsored graduate education programs are using those skills attained through or precipitated by the graduate study process [5:1].

Crowder and Davidson developed a questionnaire and distributed it to members of the 1971A to 1975B classes. In addition, they surveyed these graduates' immediate supervisors with an almost identical questionnaire in order to compare each group's perceptions (5:11). Their primary objective was to determine the extent that the graduate used his logistics education in his or her current assignment (5:9). Crowder and Davidson reached several conclusions based on an analysis of responses to the survey. First, they concluded that the graduates felt that the AFIT Logistics program was useful. Also, supervisors had the same opinion of the program as did the graduates. However, supervisors actually perceived the program to be more useful than graduates expected. Finally, Crowder and Davidson found that graduates felt that they could be better utilized in positions other than those they currently held (5:58).

Other Literature

The relevance of industry-related higher education is of growing concern to industry. In the past, educational evaluation methods normally concerned performance measures such as salary and position, rather than relating educational output and objective fulfillment (10:7). It

is important to note that the idea of output and objectives in education is rapidly gaining wide acceptance in the public education sector (6:1). J. Sterling Livingston pointed out that management education does little to improve on-the-job performance of graduates (14:79). Also, Lewis C. Solmon wrote that "the educational system is improperly preparing students to face the world of work [20:3]." However, as has been indicated, previous studies refute this position where AFIT graduates are concerned.

Despite these studies indicating the usefulness of the Graduate Logistics program, AFIT and the overall Department of Defense (DOD) education program is being criticized. The Air Force has 2738 validated graduate degree positions in the administration/management career field. While 3500 personnel possessing graduate management degrees are required to keep the graduate personnel pipeline and system filled, there are 10,754 personnel holding graduate degrees in the management area (22:24). The House Committee on Appropriations criticized this excess in review of the DOD Appropriation Bill for 1979:

The Department of Defense fiscal year 1979 request for professional education and development totals over \$400 million, including the pay and allowance of the individuals receiving the training. Not only is this a tremendous cost in terms of actual outlay of dollars, but also in terms of the talents of high potential individuals who will not be available to the Department of Defense for one to two years while undergoing training which is, in many instances, of questionable necessity [22:29].

The Department of Defense is continually faced with a budget that allows few luxuries. It is important that an institution such as the Air Force Institute of Technology be continually evaluated to assess its worth. The importance of such evaluations was highlighted during hearings on the DOD FY79 Appropriations Bill. The House Committee on Appropriations recommended that the DOD "reassess the necessity for operating both the Naval Postgraduate School and the Air Force Institute of Technology [22:29]." The objectives of this research are thus directed toward assessing the usefulness of the AFIT School of Systems and Logistics.

Objectives

The main objective of this study is to determine the extent to which graduates of the AFIT School of Systems and Logistics have used the knowledge obtained from their graduate education in follow-on assignments. Supporting objectives are to:

1. Analyze the possibility of enhanced promotion potential resulting from an AFIT education as perceived by alumni.
2. Determine and analyze the overall usefulness of the AFIT graduate management education as perceived by alumni.

3. Determine the perception of usefulness of their immediate supervisors as perceived by graduate respondents.

4. Determine the usefulness of graduate courses in follow-on assignments as perceived by alumni.

5. Determine the appropriateness of follow-on assignments as perceived by graduates.

6. Distinguish between rated graduates' perceptions of usefulness and those of other graduates.

7. Determine whether perceptions of usefulness differ among graduates of different time periods.

Research Questions

Questions addressed in the research are:

1. Is the military graduate more "promotable" as a result of having attended the school?

2. Does the School of Systems and Logistics provide an education which is useful to the graduate in his job and his Air Force career?

3. Do rated graduates derive as much usefulness from their graduate education as nonrated graduates?

4. Are the courses offered in the graduate program providing the education needed by the graduate?

5. Is the Air Force effectively assigning graduates to jobs that require an advanced education?

CHAPTER II

METHODOLOGY

Overview

After establishing the problem and research objectives, procedures for achieving these objectives were developed. First, the population was defined. Next, a method of gathering data was developed. Finally, the data analysis techniques and procedures to be used to answer the research questions were developed.

Population

Data were gathered from a single population--the opinions of those active duty Air Force officers who are graduates of the graduate management programs offered by the AFIT School of Systems and Logistics. Members of classes 1963 through 1978B were surveyed. Individuals in the process of accomplishing a permanent change of station during the survey period were excluded for practical considerations.

The Survey Instrument

General

Because the participants in this survey were dispersed over wide geographical areas, a mailed questionnaire

was considered to be the most reasonable survey instrument for data collection. A decided advantage of the mailed questionnaire is its associated cost. People can be reached at a fraction of the cost of personal interviews. Often, more time can be used in answering the questionnaire, helping assure that questions are answered with more care. In addition to this advantage, a respondent is more likely to divulge information that is of a personal nature--more so than in a personal interview. Also, there is no interviewer present to bias the answers by incorrectly recording the information (2:77-78).

Even though the mailed questionnaire was considered to be the most practical instrument in this survey, several disadvantages restrict its use and should be addressed. For example, the degree of representativeness of the survey may be difficult to determine. This results from the fact that a relatively large percentage of mailed questionnaires may not be returned. Also, some questions may be omitted or incorrectly answered because they were misunderstood. In these ways, therefore, use of the mailed questionnaire may result in valuable information not being received that could otherwise be obtained in a personal interview (2:78).

These disadvantages do not present significant problems as they pertain to this study. In addressing the problem of nonresponse, several factors need to be considered. First of all, respondent anonymity is a basic

premise of this questionnaire in order to assure the respondent that his candid answers will in no way affect his career. This guarantee, however, will probably increase nonresponse bias since a follow-up mailing of questionnaires to those subjects who initially failed to respond is not possible. But, since this study is descriptive and not inferential in nature, nonresponse has the effect only of reducing the number of subjects described. As far as reducing the amount of valuable information that could otherwise be obtained by a personal interview, we feel that the sixty-two questions (sixty-one multiple choice and one open-end--refer to Appendix A) will provide all the data needed to fulfill the research objectives.

Questionnaire Structure

A questionnaire developed for the Crowder/Davidson thesis study and subsequently modified to aid in addressing the research objectives of this study was used (refer to Appendix A). The questionnaire was divided into four sections: demographic data, assignment/promotion information, education usefulness/job requirements, and an open-end free response question.

The demographic section (questions 1-13) is concerned with gathering descriptive information such as organizational levels, major commands, Air Force Specialty Codes,

time in present assignment, and graduate class as pertains to each respondent.

The assignment/promotion information section (questions 14-21) contains questions intended to provide information about the assignments/promotability of AFIT graduates as a group compared to all Air Force officers. In addition to asking for graduates' perceptions, this section also addresses the graduates' actual promotion history in secondary and primary zone promotions.

The education usefulness/job requirements information section (questions 22-51) contains questions concerned with usefulness/appropriateness of the AFIT Logistics Program and the requirements of graduates' jobs. Within this section, the graduates' general perceptions of usefulness of the logistics program are addressed (questions 22-25 and 57-61) as well as the graduates' perceptions of how their supervisors view the usefulness of the program (questions 26-30). Finally, graduates were asked questions concerning what abilities are required of them on the job. These questions (31-56) are related to specific courses offered in the curriculum so that the logistics curriculum can be evaluated.

The last section contains an open-end question that allowed the respondent to comment on any suggestion he or she might have for improvement of the logistics graduate education program. This question was informally analyzed

by the authors. Although not rigorous in nature, this analysis provided a measure of questionnaire validity since the open-end question tended to reaffirm findings based on the attitudinal questions (questions 14-61).

The Measurement Scale

Before the data could be analyzed, it was necessary to establish a method of quantifying the responses. To do this, a Likert seven-point scale was used. The scale consists of seven possible responses ranging from "strongly disagree" to "strongly agree." This scale was paired with a statement to which the graduate was asked to indicate his level of agreement (5:19).

The Likert scale has several advantages. It is easily and quickly constructed. Also, each item that is included has met an empirical test for discriminating ability. Compared to the Thurstone scale, another attitude scale, the Likert scale is more reliable and provides a greater volume of data (7:250).

A significant disadvantage of the Likert scale is that it uses an ordinal level of measurement (7:250). Researchers are in general agreement that the use of parametric tests with ordinal scales is technically incorrect, but there is little harm in doing so (7:115-116). Although some researchers maintain that data be at least interval level when using parametric statistics, there has

been a shift in thought which recognizes the difficulty in assessing absolute levels of measure (8:55). This current thought is summarized as (8:55-56):

1. The distinction between ordinal and interval scales is not sharp. Many summated scales yield scores that, although not strictly of interval strength, are only mildly distorted versions of an interval scale.

2. Some of the arguments underlying the assertion that parametric procedures require interval strength statistics appear to be of doubtful validity.

3. Parametric procedures are, in any case, robust and yield valid conclusions, even when mildly distorted data are fed into them. Furthermore, if the distortions are severe, various transformation techniques can be applied to the data.

A basic assumption in this thesis is that the Likert seven-point scale be considered only "mildly distorted" interval level data. As such, parametric statistical techniques can be justifiably applied.

Distribution

In order to reach the target population, the AFIT Consolidated Base Personnel Office (CBPO) provided a computer generated listing of active duty Air Force officers who graduated from the School of Systems and Logistics' Graduate Management Program during the period 1963 to 1978.

Besides excluding those officers in the process of accomplishing a permanent change of station, five officers assigned to Iran were excluded as well. The political turmoil in Iran precluded mailing questionnaires to these graduates.

Each of the remaining 1045 identified graduates was sent a survey package that included a questionnaire, computer answer sheet, and a preaddressed return envelope. Additionally, each survey package contained an alumni roster information sheet used to update locator information on past graduates.

The questionnaires were mailed on 5 March 1979 with a completion deadline of 21 March 1979. A second mailing was not attempted.

Usefulness: An Operational Definition

Since the term "usefulness" serves as the foundation of this thesis and is incorporated into the structure of the survey, an operational definition of the word is necessary. The Random House Dictionary of the English Language defines "usefulness" as meaning ". . . of practical use, as for doing work; producing material results; supplying common needs [21:1574]." In the context of our research, an AFIT Logistics education is useful if it is of perceived practical use in the graduate's job performance (5:13). The term "usefulness" was applied in this manner with

regard to curriculum, assignments, and promotion potential. "Usefulness" was measured by the specific questions that addressed these three areas.

Analysis

As noted previously, the survey is divided into four areas of emphasis: demographic (questions 1-13), assignment/promotion (questions 14-21), education usefulness/job requirements (questions 22-61), and an open-end, free response question (question 62). The first step in our analysis involved transferring the responses to these questions from the computer answer sheet to a computer file. This was accomplished by using an optical scan device. Responses to the open-end question were separated for further analysis.

Validation

Since the questionnaire had been previously used and subsequently validated, this task was not repeated. However, a brief description of the validation process may be helpful.

In their thesis, Crowder and Davidson used factor analysis to validate the questionnaire. Factor analysis is a "logical content validity tool for attitude measuring instruments [5:23]." Since the questionnaire responses provided data for attitude measurement, factor analysis was used to determine the validity of grouping responses into

meaningful categories. These categories were then given subjective labels and the respective responses were aggregated for analytical purposes. Similarly, we have subjectively labeled the groups into various "usefulness" categories and indices as explained in the following section.

Usefulness Index

Five usefulness categories were used to develop five corresponding usefulness indices to evaluate the answers of the respondents. These indices, labeled G1, G2, G3, G4, and G5, are listed below along with the usefulness category to which each applies.

1. G1--perception of enhanced promotion potential as a result of graduating from AFIT (based on questions 15-18).

2. G2--overall usefulness of the AFIT Graduate Management Program as perceived by alumni (based on questions 22-25, 59).

3. G3--usefulness attitudes of their immediate supervisors as perceived by graduates (based on questions 26-30).

4. G4--perceived curriculum usefulness on the job (based on questions 31-56).

5. G5--appropriateness of assignments as perceived by graduates (based on questions 14, 57, 58, 60, 61).

Usefulness indices were formed from the distribution of summed responses with the mean acting as descriptors for each index. To illustrate, the mean for index G1 was computed by adding the mean values for each question, 15-18, on the survey. Since four questions are assigned to the G1 usefulness index, these summed mean values were divided by 4 to determine the overall mean for the index. Once the usefulness indices were computed, they were evaluated.

In order to analyze the usefulness indices, a scale was developed to aid in answering the research questions. Since the usefulness indices are based on the seven-point Likert scale, a similar scale was chosen for this purpose. Figure 1 shows the scale upon which an evaluation of the five indices was based. As indicated, 4 was used as the separation point between useful and not useful. Since a descriptor such as a mean is continuous, the range 4 to 7 indicates increasing perceived usefulness and the range 4 to 1 indicates decreasing perceived usefulness (5:35).

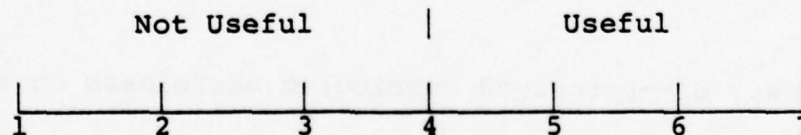


Fig. 1. Usefulness Indices Scale

In addition to determining the usefulness indices described, further analysis was required in order to meet

the last two research objectives. Rated officers' perceptions were distinguished from the perceptions of nonrated officers along the lines of the earlier objectives. That is, separate usefulness indices were calculated for rated officers and nonrated officers. Then comparisons were made. This same procedure was followed for the last objective, that of determining whether perceptions of usefulness differed between graduating classes. In this case, separate G1-G5 indices were calculated for each graduating year group and comparisons were made.

In making these comparisons, significant differences were further analyzed in an attempt to explain the differences. A criterion for determining what constituted a "significant difference" was subjectively determined by the authors and is discussed further in Chapter III.

Assumptions and Limitations

The assumptions and limitations of this thesis are based on the concept that factors critical to the constancy of the research are assumptions and noncritical factors that limit the conclusions are limitations (15:35).

The assumptions made include the following:

1. Survey respondents take the time to adequately consider each response and then answer honestly.
2. The survey questionnaire is a valid and reliable attitude measurement tool.

3. The Likert seven-point scale provides data close enough to interval level such that a comparison of means through the use of parametric statistics is reasonable.

4. Individual differences in the perception of the seven-point scale cancel each other out.

5. The operational definition of usefulness was reasonable.

The limitations included:

1. Conclusions applied only to the respondent population. Since this research was intended as a census of the 1963-1978B graduates and not all questionnaires were returned, no statistical inferences will be made about the overall population. This study is descriptive in nature of the population surveyed.

2. Only limited accuracy can be achieved in the measurement of attitudes (5:27-28).

CHAPTER III

ANALYSIS

Questionnaire Response

As mentioned in Chapter II, 1045 officers were identified as meeting the criteria for participation in this survey. Of those identified, 845 returned survey questionnaires. Although three of the questionnaires were incomplete, they were included in the analysis. The responses examined accounted for 80.9 percent of those mailed. A more complete breakout of the respondents is contained in Table 1.

TABLE 1
RESPONSE BREAKOUT BY CLASS

Year Group	Returned	Mailed	% Returned
1978	97	115	84.3
1977	101	121	83.5
1976	108	138	78.3
1975	90	118	76.3
1971-74	285	346	82.4
1967-70	152	188	80.9
1963-66	12	19	63.2
	<u>845</u>	<u>1045</u>	<u>80.9%</u>

An analysis based on a census could not be undertaken since the response rate was less than 100 percent. Therefore, the analysis in this chapter is meant to be a description of the respondent group only and no inferences to the overall population are implied.

Usefulness Indices

The five usefulness indices, G1 through G5, were calculated as the distribution of summed responses as described in Chapter II. These values are presented in Table 2.

TABLE 2
USEFULNESS INDICES

Index	Mean Response
G1	4.423
G2	5.663
G3	4.976
G4	4.420
G5	3.977

Significant Differences

A subjective threshold as to what constituted a significant difference was necessary in order to meet the last two research objectives. Since any criteria for statistical significance would be inappropriate, a criterion for practical significance was in order (5:36). In

selecting this criterion, a heuristic approach was followed. Guidance for selecting the subjective threshold of practical significance was provided by Walizer and Wienir in Research Methods and Analysis: Searching for Relationships in which they suggested that "if there is no change in the distribution of more than 5 percent the distribution will be considered identical [24:103]." This subjective threshold is followed by many researchers (24:103). When applied to the Likert Scale used in this research, a 5 percent change would suggest that a .35 difference between indices be considered significant. Taking a more conservative approach, for the purpose of this research, any difference between the indices equal to or greater than .50 was considered to be of practical significance when comparing the different subgroups of the respondent population. Because of the subjective nature of this value, Appendix B contains the mean, median, mode, standard deviation, and variance for each attitudinal question so that the reader may apply any criteria he desires.

Promotion Data Analysis

The first area of analysis involved an examination of graduates' perceptions concerning promotion potential. Besides examining graduates' perceptions in this area, actual promotion rates were tabulated.

Promotion Potential

Questions 15-18 (refer to Appendix A) sought to determine if an AFIT logistics education was perceived to enhance graduates' promotion chances. The overall index, G1, was presented in Table 1. Table 3 contains the mean response to each question in this category.

TABLE 3
PERCEPTIONS OF ENHANCED PROMOTION POTENTIAL

Question Number	Mean Response
15	4.662
16	5.059
17	4.200
18	3.771

Table 3 shows that graduates felt their AFIT education had enabled them to assume broader responsibilities and it had enhanced their promotion chances compared to their contemporaries without a graduate education (questions 15 and 16). Also, they felt their AFIT degree carried more weight for promotion purposes than did a degree earned through off-duty education (question 17). However, they did not feel that the AFIT resident program was better than the AFIT Civilian Institutions program in regard to increased promotion potential (question 18).

Promotion Statistics

Questions concerning their actual promotion performance (questions 19 and 20) were asked of graduates. From these responses, data were tabulated for promotions in both the primary zone (first-time eligibles) and in the secondary zone. All promotions to the grades of Major, Lieutenant Colonel, and Colonel were aggregated for an overall promotion rate. In deriving these rates, only respondents who were eligible for promotion in either zone were considered. It should be noted that the respondents are all active duty officers and the effect on the promotion rate of those graduates no longer on active duty is not known. Also, actual Air Force-wide promotion statistics were gathered for the same grades and were aggregated for an overall promotion rate for comparative purposes (19). The data are presented in Table 4 (primary zone) and Table 5 (secondary zone).

The seemingly high promotion rates achieved by AFIT graduates tend to confirm their perceptions of increased promotion chances as measured by questions 15 through 18. It should be noted, however, that the AFIT selection process itself may identify officers with high promotion potential.

TABLE 4

PRIMARY ZONE PROMOTION STATISTICS FOR
MAJOR, LIEUTENANT COLONEL, AND
COLONEL COMBINED

	Eligible	Selected	% Selected
AFIT Grads ^a	506	455	89.9%
Air Force ^b	9300	5486	58.9%

^aBased on survey responses of graduates from the School of Systems and Logistics (1963-1978).

^bBased on statistics from CY 78 temporary promotion boards for first-time eligibles to the grades of Major, Lieutenant Colonel, and Colonel.

TABLE 5

SECONDARY ZONE PROMOTION STATISTICS FOR
MAJOR, LIEUTENANT COLONEL, AND
COLONEL COMBINED

	Eligible	Selected	% Selected
AFIT Grads ^a	739	65	8.8%
Air Force ^b	21570	450	2.1%

^aBased on survey responses of graduates from the School of Systems and Logistics (1963-1978).

^bBased on statistics from CY 78 temporary promotion boards for first-time eligibles to the grades of Major, Lieutenant Colonel, and Colonel.

Overall Usefulness

Questions 22 through 25 and question 59 (refer to Appendix A) were used to measure graduates' perceptions regarding the overall usefulness of the AFIT Logistics Program. Index G2 was presented in Table 1. The mean response to each question in this category is presented in Table 6.

TABLE 6
OVERALL USEFULNESS

Question Number	Mean Response
22	6.019
23	5.780
24 ^a	2.617
25	5.643
59	5.490

^aAlthough a negative response question, values were not reversed in this table. However, for computing the usefulness index (G2), the mean was reversed for consistency (strongly agree = 1, agree = 2, etc.).

Respondents felt that their AFIT management education was useful to the Air Force (question 22) and they would encourage other qualified officers to attend the school (question 23). Also, graduates felt they were better equipped to solve on-the-job problems as a result of their AFIT education (questions 25 and 59). They disagreed that the education was of little use to their on-the-job performance (question 24). Index G2 suggests that,

overall, graduates perceive the school to be useful to themselves and to the Air Force.

Supervisors' Perceptions

Questions 26 through 30 were used to measure usefulness attitudes of their immediate supervisors as perceived by graduates. These questions were the basis for index G3 (refer to Table 1). Again, the mean response for each question was computed and is presented in Table 7.

TABLE 7

USEFULNESS ATTITUDES OF SUPERVISORS AS PERCEIVED BY GRADUATES

Question Number	Mean Response
26 ^a	3.233
27	5.136
28	4.991
29	5.064
30	4.920

^aQuestion 26 is a negative response question. As before, values were not reversed in this table, but were reversed when computing the overall index (G3).

It should be noted that questions 26 through 30 measure graduates' perceptions of their supervisors' feelings. With this in mind, graduates' perceived their supervisors' attitudes as being favorable to the AFIT School of Systems and Logistics.

Comparison

Indices G2 and G3 are similar in that they both attempt to measure perceptions related to overall usefulness. However, while G2 measures the graduates' perceptions directly, G3 is only an indirect measure of the supervisors' attitudes. A comparison of these two indices (G2 = 5.663 versus G3 = 4.976) indicates that the graduates perceive their education as being more useful than they (the graduates) perceive their supervisors to perceive it. In order to measure the supervisors' perceptions directly, a separate survey of supervisors would be required and is beyond the scope of this research. However, research in this regard has been accomplished and our findings are consistent with this previous study. Crowder and Davidson found that there was no significant difference between supervisors' perceptions of overall usefulness and the perceptions of the graduates regarding overall usefulness when both of these attitudes were measured directly (5:56).

Curriculum Usefulness

Questions 31 through 56 measured the graduates' perceptions of the abilities required of them in their jobs. These questions were designed to correlate with various subject areas in the Graduate Management Program offered by the School of Systems and Logistics so that a measure of usefulness of the curriculum could be derived (Index G4).

The authors subjectively labeled each of the 26 questions in this category with a brief, descriptive course title. The questions were rank ordered and are included in Table 8 along with the subjective course title and corresponding question number.

Assignment Appropriateness

Our fifth objective was to determine the appropriateness of follow-on assignments as perceived by graduates. Questions 14, 57, 58, 60 and 61 were used for that purpose. The overall index, G5, was presented earlier in Table 1. The mean response to each of these five questions is presented in Table 9.

Although respondents tended to slightly agree that their specific graduate education had been considered in their assignments (question 14), they were basically undecided on whether their job actually required an advanced education (question 57). While also basically undecided as to whether their job was commensurate with their abilities (question 58), they tended to agree that they could do their job effectively without an AFIT education (question 60). Finally, the respondents agreed that their education could be better utilized in another duty assignment (question 61).

As another measure of assignment appropriateness, respondents were asked if their current duty assignment

TABLE 8
CURRICULUM USEFULNESS

Course Description	Question #	Mean Response
Speech	52	6.468
Writing	53	6.454
Organizational Behavior	51	5.650
Analytical Techniques	56	5.334
Organization & Mgt.	38	5.328
Financial Management	40	5.052
Technical Writing	33	4.977
Mgt. Information Systems	49	4.833
Contracting & Acq. Mgt.	37	4.436
Environmental Planning	47	4.324
Quality Control	45	4.319
Statistics	39	4.309
Basic Quant. Methods	32	4.241
Accounting	31	4.204
Quant. Decision Making	34	4.159
Contract Management	36	4.088
Contract Law	35	4.026
Distribution Management	41	4.005
Microeconomics	54	3.998
Production Management	42	3.932
Cost & Pricing	46	3.796
Simulation	48	3.653
Cost & Reliability	55	3.626
Macroeconomics	55	3.593
International Logistics	43	3.564
Computer Programming	50	2.555

TABLE 9
ASSIGNMENT APPROPRIATENESS

Question Number	Mean Response
14	4.831
57 ^a	3.785
58	4.219
60 ^a	4.492
61 ^a	4.887

^aThese are negative response questions. Values in the table were not reversed, but were reversed when computing the overall index (G5).

had an Advanced Academic Degree Code (AADC) requiring the degree they had obtained from AFIT. Of the 845 respondents, only 141 (17 percent) answered "yes" (refer to question 10, Appendix A). Although 130 respondents (15 percent) did not know whether their jobs required an AADC, the majority (574/68 percent) answered "no" to the question.

Since Index G5 (assignment appropriateness) was the only index less than 4.0, it was singled out for further analysis. Questions 14, 57, 58, 60, and 61 were reanalyzed based on the graduates' response to question 10--separate G5 indices were computed based on whether the respondents' job required an AADC. The data is presented in Table 10.

Table 10 indicates, without exception, that graduates who hold a job requiring an AADC perceive their assignments to be more appropriate in light of the

TABLE 10
ASSIGNMENT APPROPRIATENESS BASED ON
ADVANCED ACADEMIC DEGREE CODE

Question Number	AADC Required	AADC Not Required
14	5.645	4.551
57 ^a	2.957	4.089
58	4.589	4.026
60 ^a	4.170	4.646
61 ^a	4.213	5.165
G5 Index	4.579	3.725

^aThese are negative response questions. Values in the table were not reversed, but were reversed when computing the overall index for each group.

education they have received. Moreover, the difference between the G5 indices for each group is of practical significance as earlier defined.

Since AADC was shown to have a significant impact on perceptions of assignment appropriateness, the authors decided to undertake an analysis of curriculum usefulness based on AADC requirements.

AADC versus Curriculum Usefulness

Separate G4 indices were calculated based on graduates' response to question 10. These indices, presented in Table 11, show that a difference of practical significance exists between graduates whose jobs require an AADC and graduates whose jobs do not require an AADC.

TABLE 11
CURRICULUM USEFULNESS BASED ON AADC REQUIREMENTS

AADC	G4 Index
Required	4.847
Not Required	4.236

Although both groups perceive the curriculum to be useful in their jobs, graduates in jobs requiring an AADC perceive the curriculum to be significantly more useful than those graduates in jobs not requiring an AADC.

In order to further explain why graduates perceived their assignments to be inappropriate, a further breakdown of assignment appropriateness and organizational level was made.

Assignment Appropriateness
and Organizational Level

To test the possibility that perceptions of assignment appropriateness were related to organizational level of assignment, separate G5 indices were computed based on graduates' responses to question 1 (refer to Appendix A). For convenience of analysis, the levels of Air Division and below were combined and compared to Numbered Air Force and above. Additionally, responses marked "other" were excluded from analysis because of the wide range of responses in this category. The findings are presented in Table 12.

TABLE 12

ASSIGNMENT APPROPRIATENESS VERSUS ORGANIZATIONAL LEVEL

	Air Division & Below	Numbered Air Force & Above
G5 Index	3.58	4.22

A more detailed breakdown of the same data is contained in Appendix C.

Based on the data in Table 12, graduates who hold jobs at Numbered Air Force levels and above perceive their assignments to be more appropriate than graduates assigned to jobs below Numbered Air Force. The overall significance of this finding is realized when the actual number of graduates assigned to the lower organizational levels is considered. Of the 765 graduates analyzed, 333 or 43.5 percent are assigned to Air Division and below organizational levels. Moreover, 180 of these graduates are assigned to Squadron level jobs--the level that had the lowest G5 index (3.41).

Rated versus Nonrated Perceptions

An analysis of the differences in perceptions of rated and nonrated graduates was conducted along the lines of earlier objectives to determine if differences of practical significance existed. Of the 845 graduates who responded, 210 were rated (127 pilots and 83 navigators) and 635 were nonrated.

First, a comparison of perceptions regarding enhanced promotion potential was made (Index G1). Then comparisons between the two groups regarding indices G2, G3, G4 and G5 were conducted.

Promotion Potential

An analysis of any differences between perceptions of rated and nonrated officers regarding enhanced promotion potential simply entailed calculating separate G1 indices for each group. The G1 indices for rated and nonrated graduates are presented in Table 13.

TABLE 13

PERCEPTION OF ENHANCED PROMOTION POTENTIAL
BASED ON RATED VERSUS NONRATED GRADUATES

Rated Graduate?		G1 Index
Yes	4.304
No	4.462

Table 13 shows that no significant difference exists between rated and nonrated graduates--both groups tend to agree that their AFIT education has enhanced their promotion potential.

Promotion Statistics

A comparison of the promotion rates of rated and nonrated graduates is presented for descriptive purposes

only. No attempt was made to explain any differences or to determine if the differences were significant. Again, it should be pointed out that all the respondents are on active duty and the effect of those graduates no longer on active duty is not known. Also, actual Air Force-wide promotion statistics were gathered for the same grades and aeronautical ratings for purposes of further comparison (19). Only aggregate promotion rates to the grades of Major, Lieutenant Colonel, and Colonel are presented in Table 14 (primary zone) and Table 15 (secondary zone).

TABLE 14
PRIMARY ZONE PROMOTION STATISTICS FOR
MAJOR, LIEUTENANT COLONEL, AND
COLONEL COMBINED

	Eligible	Selected	% Selected
AFIT Grads ^a			
Rated	120	106	88.3%
Nonrated	386	349	90.4%
Air Force ^b			
Rated	3684	2291	62.2%
Nonrated	5033	2874	57.1%

^aBased on survey responses of graduates from the School of Systems and Logistics (1963-1978).

^bBased on statistics from CY 78 temporary promotion boards for first-time eligibles to the grades of Major, Lieutenant Colonel, and Colonel (line officers only).

TABLE 15
SECONDARY ZONE PROMOTION STATISTICS FOR
MAJOR, LIEUTENANT COLONEL, AND
COLONEL COMBINED

	Eligible	Selected	% Selected
AFIT Grads ^a			
Rated	193	15	7.8%
Nonrated	546	50	9.2%
Air Force ^b			
Rated	10034	281	2.8%
Nonrated	9692	148	1.5%

^aBased on survey responses of graduates from the School of Systems and Logistics (1963-1978).

^bBased on statistics from CY 78 temporary promotion boards for first-time eligibles to the grades of Major, Lieutenant Colonel, and Colonel (line officers only).

Overall Usefulness

Separate G2 indices were computed for each group (rated and nonrated) and comparisons were made. The data is presented in Table 16. No significant difference exists. Both rated and nonrated alike agree concerning the overall usefulness of their AFIT graduation.

Supervisors' Perceptions

Separate G3 indices were computed for each group in order to compare their perceptions regarding supervisors' attitudes. The data are presented in Table 17. No significant difference exists. Both rated and nonrated graduates

TABLE 16
OVERALL USEFULNESS BASED ON RATED
VERSUS NONRATED GRADUATES

Group	G2 Index
Rated	5.62
Nonrated	5.73

TABLE 17
SUPERVISORS' ATTITUDES AS PERCEIVED BY
RATED AND NONRATED GRADUATES

Group	G3 Index
Rated	4.96
Nonrated	4.98

perceive their supervisor's attitudes as being favorable toward the School of Systems and Logistics.

Curriculum Usefulness

Again, separate G4 indices were computed for rated and nonrated graduates in order to compare their perceptions regarding curriculum usefulness (questions 31 through 56). These findings are presented in Table 18.

Since a significant difference exists, further analysis was conducted to help explain this difference. Because the authors felt that assignments play an important role in a graduates' perceived curriculum usefulness,

TABLE 18
CURRICULUM USEFULNESS BASED ON RATED
VERSUS NONRATED GRADUATES

Group	G4 Index
Rated	3.98
Nonrated	4.56

further analysis was conducted in conjunction with rated versus nonrated assignment appropriateness.

Assignment Appropriateness

So that the perceptions of rated and nonrated graduates could be compared with regard to assignment appropriateness, separate G5 indices were calculated for each group. These indices are presented in Table 19.

TABLE 19
ASSIGNMENT APPROPRIATENESS BASED ON
RATED AND NONRATED GRADUATES

Group	G5 Index
Rated	3.601
Nonrated	4.102

Based on this comparison, rated graduates perceived their assignments to be significantly less appropriate than nonrated graduates.

Since it has already been shown that assignment appropriateness is related to AADC requirements and the organizational level in which a graduate works, these two factors were used in an attempt to explain the difference in perceptions of rated and nonrated graduates regarding assignment appropriateness.

AADC Analysis

In order to explain part of the difference in the attitudes of rated and nonrated graduates regarding assignment appropriateness, the authors investigated the possibility that nonrated graduates were being assigned to jobs with an Advanced Academic Degree Code more often than rated graduates. Of the 635 nonrated graduates surveyed, 110 (17.32 percent) held jobs coded as requiring an advanced degree. However, of the 210 rated graduates surveyed, only 31 (14.76 percent) had jobs coded for an advanced degree. Although no statistical significance is implied, it appears that nonrated graduates are being assigned to jobs requiring an advanced degree more often than rated graduates.

Organizational Level Analysis

In an effort to further explain the difference between rated and nonrated indices of assignment appropriateness, the differences in levels of organizational assignment were analyzed. In an earlier analysis, it was shown

that organizational level of assignment was related to perceptions of assignment appropriateness. Here, the authors were interested in determining if nonrated graduates have a higher incidence of assignment to higher organizational levels.

In making this analysis, the organizational levels of Air Division and below were again combined and compared to the levels of Numbered Air Force and above. "Other" responses were excluded from analysis. The data are presented in Table 20.

TABLE 20
ORGANIZATIONAL LEVEL ANALYSIS^a--
RATED VERSUS NONRATED

	Air Division & Below	Numbered Air Force & Above
Rated	125	69
Nonrated	208	363

^aSixty-four nonrated and sixteen rated graduates were assigned to "other" levels and were not included in this analysis.

Of the rated graduates considered, 64.4 percent were assigned to Air Division and below. This compares to only 36.4 of nonrated graduates assigned to the same levels. Furthermore, 45.4 percent (88) of the rated graduates were assigned to squadron level jobs, compared to only 16.1 percent (92) of the nonrated graduates. Again, although

no statistical significance is implied, it appears that rated graduates are assigned to lower organizational levels more frequently than nonrated graduates.

Comparison of Graduating Year Groups

A comparison of the graduating year groups was conducted to determine if there were any differences in their perceptions of usefulness. Officers graduating between 1971 and 1974, 1967 and 1970, and 1963 and 1966 were all combined into separate groups for ease of analysis. This analysis involved computing separate usefulness indices (G1-G5) for each graduating year group and then comparing these indices for significance.

Comparisons

Separate G1 (Promotion Enhancement), G2 (Overall Usefulness), G3 (Supervisors' Perceptions), G4 (Curriculum Usefulness), and G5 (Assignment Appropriateness) indices were developed for each graduating year group (refer to question 12, Appendix A). The results are presented in Table 21. A more detailed breakdown can be found in Appendix E.

Promotion Potential--G1

The different year groups were consistent in their perceptions regarding whether their AFIT education had enhanced their promotion chances. The only class displaying

TABLE 21
COMPARISON OF GRADUATING YEAR GROUPS

Year Group	<u>Indices</u>				
	G1	G2	G3	G4	G5
1978	4.59	5.39	4.95	4.31	3.77
1977	4.56	5.70	5.21	4.30	3.67
1976	4.44	5.70	5.03	4.45	3.94
1975	4.34	5.45	4.90	4.38	3.84
1971-74	4.34	5.65	4.96	4.35	3.93
1967-70	4.37	5.87	4.84	4.66	4.47
1963-66	4.94	6.45	5.28	5.12	4.57

a significant difference of opinion compared to the other classes was the 1963-66 year group. Since the number of graduates responding from that year group was low (12), and no trend seemed apparent, no attempt was made to explain the difference. The various groups are consistent in that they all tend to slightly agree that their promotion chances have increased as a result of attending AFIT.

Overall Usefulness--G2

Again, the different year groups were consistent in their perceptions regarding the overall usefulness of the AFIT program. As before, the 1963 to 1966 year group's perception of the program's overall usefulness was higher than any other group, but no attempt was made to explain

the difference. Each year group tended to agree that the program was useful overall.

Supervisors' Perceptions--G3

Findings resulting from a comparison of the different year groups in regard to perceived supervisors' attitudes are consistent with the results presented earlier in this study. First, graduates, regardless of year group, perceived their supervisors' attitudes as being favorable to the AFIT School of Systems and Logistics. But a comparison of indices G2 and G3 shows that each year group's own perception of overall usefulness was higher than they perceived their supervisors' attitude toward overall usefulness to be. In other words, a comparison of indices G2 and G3 on a group-by-group basis indicates that the graduates perceive their education as being more useful than they (the graduates) perceive their supervisors to believe it to be. As mentioned earlier, previous research showed that when supervisors' perceptions were measured directly and then compared to graduates' perceptions, no significant difference existed.

Curriculum Usefulness--G4

In the area of curriculum usefulness, as measured by questions 31-56, the different year groups displayed no significant differences or trends, although the 1963-66 year group rated the curriculum higher than any other

class. Overall, each group felt the curriculum had been useful in their jobs.

Assignment Appropriateness--G5

In a comparison of perceptions regarding assignment appropriateness, the consensus of each of the groups graduating between 1971 and 1978 indicated that they considered their assignments to be inappropriate in light of their AFIT education. However, the groups graduating between 1963 and 1970 considered their assignments to be more appropriate.

In an attempt to possibly explain this difference, officers graduating from 1971 to 1978 were combined to form one group and those graduating from 1963 to 1970 were combined to form a second group. A comparison of the two resulting groups was made with regard to jobs requiring an Advanced Academic Degree Code and organizational level of assignment. An analysis based on AADC did not reveal any new information, but a comparison of organizational level of assignment was more enlightening.

The organizational levels were grouped as before--Air Division and below, Numbered Air Force and above--and a comparison of percentages was made. Responses marked "other" were excluded from analysis. The resulting data are presented in Table 22.

TABLE 22
GRADUATING YEAR GROUP AND ORGANIZATIONAL
LEVEL OF ASSIGNMENT

	Air Division & Below	Numbered Air Force & Above
1971-78	47%	53%
1963-70	28%	72%

The significance of organizational level to perceptions of assignment appropriateness was highlighted earlier. Here again, there appears to be a substantial difference in assignment rates to Air Division & below for the 1971 to 1978 group when compared to the 1963 to 1970 group, which helps explain the differences in their perceptions regarding assignment appropriateness.

Analysis of Open-end Question

Question 62 (refer to Appendix A) asked graduates to suggest improvements for the AFIT Graduate Logistics Program. Approximately 25 percent of the surveys returned contained a response to this question. These responses were analyzed to determine if the suggestions were concentrated in any particular areas and to get an overall idea of the graduates' feelings regarding the school. In doing this, it was found that the suggestions fell into four basic categories relating to assignments, speaking and writing, school publicity, and course additions/

deletions. These four categories are presented below along with representative comments from the graduates.

Assignments

The most prevalent suggestions dealt with assignments. Graduates expressed feelings of general dissatisfaction with their jobs. They felt that they could be more effectively utilized in assignments that required their education. Overall, the suggestions indicated that the Air Force was not effectively matching graduates to jobs that fully utilized their abilities.

One example of this situation resulted in the following comment--"The Air Force does not use the education it has financed for me. Civilian industry will. My resignation is effective 1 May 1979." Another respondent suggested that "Major Commands should monitor and control people who have advanced academic degrees to insure they are utilized properly." Regarding the use of his graduate logistics education in three follow-on jobs, a respondent wrote, "I have worked in a joint service SPO (4 years), at wing maintenance (3 years), and now at AFTEC. My AFIT education has been of little use in all 3 jobs."

These comments support earlier findings in this research as expressed by index G5--assignment appropriateness. That is, graduates feel their assignments to be inappropriate in light of the education they have received.

Speaking and Writing

A second area of concentration was concerned with speaking and writing skills. Graduates tended to emphasize the importance of these basic skills in the day-to-day performance of their jobs. They suggested that speaking and writing be emphasized in the program. One respondent wrote "encourage the use of term papers and speeches. I have found that it's vitally important to speak and write clearly and concisely." Another suggested that "more time and effort should be devoted to developing communication skills"

Again, their suggestions are consistent with earlier findings. In an analysis of curriculum usefulness, speaking and writing rated as the two most frequently cited abilities required on the job.

School Publicity

Another area where suggestions were concentrated concerned the need to publicize the school. Graduates felt that their supervisors and others were not aware of the capabilities graduates had acquired from AFIT. Graduates felt that supervisors should be made more aware of what the graduate is capable of doing. When commenting on the decision making techniques he had learned at AFIT, one graduate stated that

. . . a lack of understanding of the techniques by superiors, peers, and subordinates make it difficult to use these techniques as aids to decision making when so many people still believe completely in the "seat of the pants" approach to decision making.

Another graduate stated that his supervisors are "unfamiliar with the terminology, analytical tools, and subjects taught at AFIT." A recent graduate stated that

My civilian supervisor knows too little about the Logistics program. . . . I suggest you prepare a package for the supervisors of graduates which would explain the program and summarize the curriculum.

Course Changes

Graduates recommended numerous course additions and deletions. Since the majority of responses in this category did not concern any one course or subject area, this information was presented to the applicable departments (i.e., Department of Communication and Humanities) for consideration.

Thus, with the analysis of the graduates' responses to the survey complete, effort was directed toward translating these findings into useful conclusions.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

Summary

This study was undertaken to determine the usefulness of the graduate degree earned at the AFIT School of Systems and Logistics. Such an evaluation is continually needed because of changing technology and subsequent changing job requirements. Also, government budgetary restraints have resulted in numerous Congressional attacks on DOD and Air Force sponsored graduate education programs. Such close scrutiny further warrants studies to justify expenditures. Having thus established the problem and justified the research, objectives to be met were established.

The main objective was to determine the extent to which the graduates had used their AFIT education in follow-on assignments. In doing this, the authors wanted to determine graduates' perceptions in several different areas. First, did graduates perceive their promotion chances to increase because of their graduate education? Next, what were their perceptions of the overall usefulness of the program? How did graduates perceive their supervisors' feelings as to the usefulness of the program? Also,

how useful did graduates perceive the curriculum to be in their jobs? Did graduates feel their follow-on assignments to be appropriate considering the education they had received? Was there a difference in the perceptions of rated and nonrated graduates regarding the AFIT program? Finally, were there any differences in the perceptions of usefulness among graduates of different time periods? After establishing these objectives, the procedure for meeting them was developed.

Graduates dating back to the first class awarded a Master of Science degree in 1963, to the most recent graduating class, 1978B, were identified for analysis. Air Force officers still on active duty and not in the process of making a permanent change of station were sent previously developed questionnaires. Of the 1045 questionnaires mailed, 845 completed surveys were returned--a rate of 80.9 percent.

Five "usefulness" categories were developed and subjectively labeled to coincide with the first five research objectives. Corresponding indices (G1 to G5) were computed from the graduates' responses to questions belonging to one of the five categories. Next, separate G1 to G5 indices were computed for the different subgroups of graduates. These were used as the basis for meeting the last two research objectives--the comparison of rated and nonrated graduates and comparison of graduates of different classes.

In making these comparisons, any difference between the indices of .5 or greater was considered to be of practical significance. When a practically significant difference was found to exist, further analysis was conducted in order to help explain the difference. All of these procedures were employed with the objective of providing a descriptive analysis of the respondent group. No inference to the overall population was made or implied.

Conclusions

The conclusions of this research are based on an analysis of the responses to a survey of 845 active duty Air Force officers who graduated from the AFIT School of Systems and Logistics between 1963 and 1978. Limitations on the conclusions are:

1. The conclusions apply only to the respondent population. Since the research was originally intended as a census and not all questionnaires were returned, no statistical inferences to the overall population were attempted. This study is descriptive of the respondent population only.

2. Only limited accuracy can be achieved in the measurement of attitudes.

Analysis of questionnaires completed by the respondent population led to the following conclusions:

1. Graduates felt their promotion chances had increased as a result of attending AFIT. This conclusion is based on a G1 index of 4.423. Graduates' perceptions in this regard are supported by the high promotion rates achieved by them in both primary and secondary promotion zones.

2. Graduates felt that the AFIT Graduate Logistics Program was useful overall to themselves and to the Air Force. This conclusion is based on a G2 index of 5.663.

3. Graduates perceived their supervisors' feelings to be favorable to the AFIT program. This conclusion is based on a G3 index of 4.976. However, graduates perceive the school to be more useful than they (the graduates) perceive their supervisors to believe it to be. This conclusion is based on a comparison of indices G2 and G3-- 5.663 versus 4.976. No possible explanation of this difference was found and is believed to be beyond the scope of this research.

4. Overall, graduates felt that courses offered at the School of Systems and Logistics were useful in their jobs. This conclusion is based on a G4 index of 4.420.

5. Overall, graduates felt their assignments to be inappropriate in light of the education they had received. This conclusion is supported by a G5 index of only 3.977. Also, the authors concluded:

(a) Graduates in jobs requiring an Advanced Academic Degree Code (AADC) perceived their assignments to be more appropriate than graduates in jobs not requiring an AADC. This conclusion is supported by a comparison of G5 indices for each of the two groups--4.579 (AADC required) versus 3.735 (AADC not required).

(b) Graduates assigned to jobs in lower organizational levels (Air Division and below) perceived their assignments to be less appropriate than graduates assigned to higher organizational levels (Numbered Air Force and above). This conclusion is supported by a comparison of G5 indices calculated based on responses to question 1 (refer to Appendix A)--3.48 (Air Division and below) versus 4.22 (Numbered Air Force and above).

The conclusions from 5(a) and 5(b) above were used as the basis for explaining conclusion 5. That is, only 16.7 percent of the graduates surveyed were assigned to jobs requiring an Advanced Academic Degree Code. Also, a relatively high percentage of graduates were assigned to the lower organizational levels described above. Approximately 43.5 percent of the graduates surveyed were assigned to jobs at or below the Air Division level.

6. No significant difference was found to exist between rated and nonrated graduates regarding their perceptions of promotion potential, overall usefulness, or

perceived supervisors' perceptions. This conclusion was based on a comparison of G1, G2, and G3 indices for both groups. However, nonrated graduates felt the curriculum to be more useful than did rated graduates. G4 indices for rated and nonrated graduates were 3.98 and 4.56 respectively. Also, nonrated graduates considered their assignments to be more appropriate than did rated graduates. This conclusion was based on a comparison of G5 indices of 3.601 and 4.102 for rated and nonrated graduates respectively. Using the findings from 5(a) and 5(b) above, these last two conclusions were partially explained by:

(a) Nonrated graduates are assigned to Advanced Academic Degree Coded jobs more frequently than rated graduates--17.32 percent versus 14.76 percent.

(b) Nonrated graduates are assigned to lower organizational levels less frequently than rated graduates--36.4 percent versus 64.4 percent.

7. No significant differences were found to exist between graduates of different time periods regarding perceived promotion potential, overall usefulness, supervisors' perceptions, or curriculum usefulness. This conclusion was based on a comparison of indices G1, G2, G3, and G4 for the respective groups. However, those officers graduating between 1971 and 1978 felt their assignments to be less appropriate than did the graduates of the 1963 to 1970 year group. This conclusion was based on a

comparison of G5 indices for each of the two groups. Again, the findings presented in 5(b) were used as the basis for explaining the difference. Graduates from the 1963 to 1970 group were assigned to lower organizational levels less frequently than graduates from the 1971 to 1978 group--28 percent versus 47 percent respectively.

Recommendations

Based on our analysis and subsequent conclusions, several recommendations are in order.

1. Improve the quality of assignments. AFIT graduates should be assigned to jobs that effectively utilize their graduate education. The Advanced Academic Degree Code provides a good measure of assignment appropriateness. Therefore, it is recommended that students not be assigned to AFIT unless the Manpower and Personnel Center (MPC) can assure them Advanced Academic Degree Coded jobs upon graduation.

2. Assign graduates to higher organizational levels. There is a disproportionate share of graduates assigned to lower organizational levels, particularly to squadron and below assignments--the level that showed the least use of the graduates' education. Since higher organizational levels make better use of the graduates' education, MPC should assign graduates to these higher levels.

3. Utilize rated graduates more effectively.

Rated graduates' assignments are the least appropriate, more likely to be at lower organizational levels, and require an advanced degree less often than other graduates. Rated graduates should be used at least as effectively as nonrated graduates. It is recommended that MPC and Major Commands monitor rated graduates' assignments following directed flying duty in order to assign them to jobs that effectively utilize their graduate education.

4. Acquaint supervisors in the field with the AFIT program. Supervisors are generally not aware of the educational opportunities that have been made available to AFIT graduates. As a result, it seems they are not effectively utilizing the graduates' skills. The School of Systems and Logistics should inform supervisors about the job graduates are capable of performing--given the chance. Without the opportunity to apply his knowledge on the job, an officer's AFIT graduate education is a waste of time and money to the Air Force.

Recommendations for Future Research

To aid future researchers, the raw data used in this research is available from the Department of Communication and Humanities, School of Systems and Logistics, Wright-Patterson AFB, Ohio. With this data thus available, additional research is recommended with regard to:

1. Assignments--analyze Air Force Specialty Codes addressed in the questionnaire in an effort to identify which particular jobs most effectively utilize a graduate's advanced education.

2. Sampling techniques--develop a sampling plan whereby statistical inferences from the sample can be applied to the general population of AFIT graduates.

3. Comparing current students and graduates--make the necessary modifications to the questionnaire used in this research and then survey officers currently attending the School of Systems and Logistics. Compare the students' anticipations with the perceptions of graduates in the field.

APPENDICES

APPENDIX A
SURVEY QUESTIONNAIRE

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (ATIC)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433



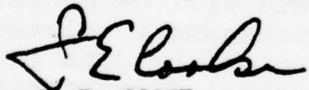
REPLY TO
ATTN OF: LSGR (Lt Col McKemey/AUTOVON 785-4698)

28 February 1979

SUBJECT: AFIT Graduate Management Programs Alumni Survey

TO: School of Systems and Logistics Alumnus

1. The AFIT School of Systems and Logistics is constantly striving to make the graduate management curriculum relevant to the on-the-job needs of the Air Force. The attached questionnaire is intended to determine how graduates feel about the usefulness of the program to themselves and to the Air Force. The survey has been reviewed and approved by HQ USAF and has been designated USAF SCN 79-56.
2. While your participation in this survey is voluntary, a valid cross-section of attitudes is possible only through your willingness to take 15-20 minutes to complete and return the survey. Your responses to the questions will be confidential; we are interested in the collective responses of graduates.
3. Please return the completed survey in the enclosed preaddressed envelope by 20 March 1979.


G. E. COOKE
Major General, USAF
Commandant

- 3 Atch
1. Survey
 2. Answer Sheet
 3. Return Envelope

PRIVACY ACT STATEMENT

In accordance with paragraph 30, AFR 12-35, the following information is provided as required by the Privacy Act of 1974.

a. Authority

(1) 10 USC 8012, Secretary of the Air Force, Powers, Duties, Delegation by Compensation; and/or

(2) 5 USC 301, Departmental Regulations; and/or

(3) DOD Instruction 1100.13, 17 Apr 68, Surveys of Department of Defense Personnel; and/or

(4) AFR 30-23, 22 Sep 76, Air Force Personnel Survey Programs:

b. Principal purposes. The survey is being conducted to collect information to be used in research aimed at illuminating and providing inputs to the solution of problems of interest to the Air Force and/or DOD.

c. Routine uses. The survey data will be converted to information for use in research and management related problems. Results of the research, based on the data provided, will be included in a written doctoral dissertation and/or master's theses, and may also be included in published articles, reports, or texts. Distribution of the results of the research based on the survey data, whether in written form or presented orally, will be unlimited.

d. Participation in this survey is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who elects not to participate in any part or all of this survey.

1979 GRADUATE SURVEY

GRADUATE MANAGEMENT PROGRAMS

Please mark your responses to the following questions on the machine scorable answer sheet with a Number 2 pencil.

PART I--BACKGROUND INFORMATION

1. What is the organizational level of your current assignment?

- a. Squadron or below
- b. Group
- c. Wing
- d. Air Division
- e. Numbered Air Force
- f. Major Command
- g. HQ Air Force
- h. Department of Defense
- i. Separate Operating Agency
- j. Other (please describe) _____
- k. Not applicable

2. To what Major Command are you presently assigned?

- | | | |
|------------|-----------|----------------------------|
| a. SAC | h. USAFA | o. AFC |
| b. TAC | i. USAFE | p. AFLC |
| c. MAC | j. USAFSO | q. AFSC |
| d. ATC | k. USAFSS | r. Other (please describe) |
| e. USAF | l. AAC | _____ |
| f. HQ USAF | m. ADC | s. Not applicable |
| g. PACAF | n. AFAFC | |

3. What is your current duty AFSC?

- | | | |
|---------|---------|----------------------------|
| a. 28XX | h. 62XX | o. 27XX |
| b. 30XX | i. 63XX | p. 29XX |
| c. 31XX | j. 64XX | q. 55XX |
| d. 40XX | k. 65XX | r. Other (please describe) |
| e. 46XX | l. 66XX | _____ |
| f. 51XX | m. 67XX | s. Civilian/Not applicable |
| g. 60XX | n. 004X | |

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4. How long have you held your present assignment?
- a. 1 year or less
 - b. Over 1 year but less than 2 years
 - c. 2 years but less than 3 years
 - d. 3 years or over
5. What was your grade when you finished your resident AFIT program?
- a. 0-1
 - b. 0-2
 - c. 0-3
 - d. 0-4
 - e. 0-5
 - f. 0-6
 - g. Civilian (please write in GS grade) _____
6. What is your current grade?
- a. 0-1
 - b. 0-2
 - c. 0-3
 - d. 0-4
 - e. 0-5
 - f. 0-6
 - g. Civilian (please write in GS grade) _____
7. How many people do you directly supervise?
- a. 0-2 people
 - b. 3-6 people
 - c. 7-10 people
 - d. 11-15 people
 - e. over 15 people
8. How many years commissioned service do you have?
- a. 5 years or less
 - b. over 5 years but less than 10 years
 - c. over 10 years but less than 15 years
 - d. over 15 years but less than 20 years
 - e. over 20 years
 - f. Civilian

9. What is your aeronautical rating?
- a. Pilot
 - b. Navigator
 - c. Nonrated
 - d. Not applicable
10. Does your current duty assignment have an Advanced Academic Degree code requiring the specific master's degree you acquired from the Air Force Institute of Technology?
- a. Yes
 - b. No
 - c. I don't know
 - d. Not applicable
11. What approximate percentage of time have you served in a logistics related job (including Facilities Management) since graduation?
- a. 0-10%
 - b. 11-25%
 - c. 26-50%
 - d. 51-75%
 - e. 76-100%
12. When did you complete your full-time resident studies at AFIT?
- a. in 1978
 - b. in 1977
 - c. in 1976
 - d. in 1975
 - e. in 1971, 1972, 1973, or 1974
 - f. in 1967, 1968, 1969, or 1970
 - g. in 1966 or prior to 1966
13. What was your specific graduate program?
- a. Logistics Management
 - b. Logistics Management (Procurement Major)
 - c. Logistics Management (International Logistics Major)
 - d. Logistics Management (Acquisition Logistics Major)
 - e. Facilities Management
 - f. Other

PART II--ASSIGNMENT/PROMOTION INFORMATION

The questions in this section are intended to provide information about the assignments/promotability of Air Force Institute of Technology graduates as a group compared to all Air Force officers. Please indicate how much you agree or disagree with the following statements using this response scale:

Strongly			Neither				
Disagree	Disagree	Slightly	Agree nor	Slightly	Agree	Strongly	
		Disagree	Disagree	Agree		Agree	
A	B	C	D	E	F	G	

14. My specific graduate education has been considered in my assignment(s) since graduation.
15. My graduate education has enabled me to assume broader responsibilities than my contemporaries without an AFIT education.
16. My graduate education has enhanced my promotion chances compared to my contemporaries without an AFIT education.
17. My AFIT graduate degree has more weight for promotion than a degree earned through off-duty education.
18. My AFIT resident programs degree has more weight for promotion than a degree earned through the AFIT Civilian Institutions degree program.
19. I was selected for promotion in the secondary zone to the grade(s) of:
 - a. Major
 - b. Lieutenant Colonel
 - c. Colonel
 - d. To a. and b.
 - e. To a. and c.
 - f. To b. and c.
 - g. To a., b., and c.
 - h. Not selected for any secondary zone promotions when eligible
 - i. Have not been eligible for secondary zone consideration

Please use the following responses:

Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree
A	B	C	D	E	F	G

20. I was selected for promotion in the primary zone the first time I was eligible to the grade of:

- a. Major
- b. Lieutenant Colonel
- c. Colonel
- d. a. and b.
- e. a. and c.
- f. b. and c.
- g. a., b., and c.
- h. Not applicable--I have not been eligible yet for primary zone consideration to any grade
- i. I have been passed over for promotion

21. I was passed over for promotion in the primary zone one or more times:

- a. To Major
- b. To Lieutenant Colonel
- c. Both a. and b.
- d. Not applicable--I was selected for promotion when eligible

PART III--EDUCATION USEFULNESS/JOB REQUIREMENTS INFORMATION

The questions in this section are concerned with the usefulness/appropriateness of the AFIT School of Systems and Logistics graduate management programs and the requirements of your present job. Read each statement, then mark the answer sheet to indicate how much you agree or disagree with the statement. Use the following response scale for each question:

Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree
A	B	C	D	E	F	G

22. My AFIT School of Systems and Logistics management education is useful to the Air Force.

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Please use the following responses:

Strongly Agree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree
A	B	C	D	E	F	G

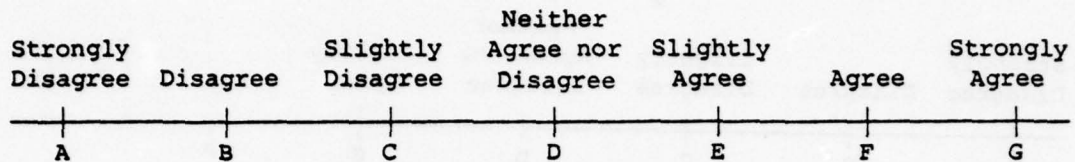
23. I would encourage other qualified officers to attend the AFIT School of Systems and Logistics graduate management program.
24. My AFIT School of Systems and Logistics education is of little use to my on-the-job performance.
25. I am better equipped to solve on-the-job problems because of my AFIT School of Systems and Logistics education.

Please do not consult with your supervisor when answering questions 26-30. We need your impression of the supervisor's views.

26. My supervisor feels that an AFIT School of Systems and Logistics education is of little use to my on-the-job performance.
27. My supervisor feels that my AFIT School of Systems and Logistics education is useful to the Air Force.
28. My supervisor would encourage other people who work for him or her to attend the AFIT School of Systems and Logistics graduate management program.
29. My supervisor feels that attendance of the AFIT School of Systems and Logistics graduate management program has enhanced my Air Force career.
30. My supervisor feels that I am better equipped to solve on-the-job problems because of my AFIT School of Systems and Logistics education.
31. My job requires the ability to understand and analyze accounting records and reports (such as fund coding system, budgets, cost center reports, allotment ledgers, financial statement, etc.).
32. My job requires the ability to understand and/or apply mathematical techniques beyond basic arithmetic operations.
33. My job requires the ability to understand and analyze or actually prepare in-depth staff studies, technical reports, research studies, etc.

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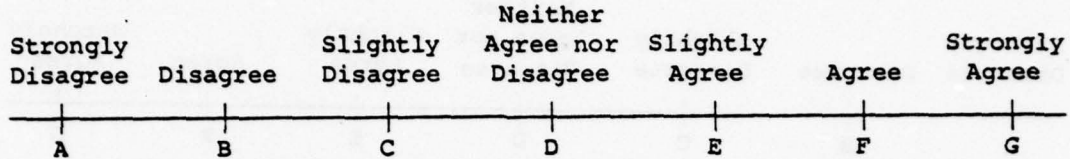
Please use the following responses:



34. My job requires the ability to use and/or understand quantitative decision making techniques such as best order quantity, transportation routes with the lowest cost, most efficient use of available personnel, etc.
35. My job requires a working knowledge of those federal laws applicable in the letting and administration of contracts (such as laws/regulations concerning competitive bidding, use of accepted specifications, etc.).
36. My job requires a working knowledge of the contract administration process.
37. My job requires a working knowledge of the federal procurement and/or acquisition process.
38. My job requires the ability to analyze existing organizational structure (such as work flow patterns, interpersonal communications, etc.).
39. My job requires the understanding and/or application of statistical analysis concepts (such as in requirements forecasting, analysis of trends, predicting the probability of an occurrence, etc.).
40. My job requires an understanding of the financial management methods and systems used by the DOD (such as the Resource Management System, Programming, Planning and Budgeting System, industrial funds, stock funds, etc.).
41. My job requires the ability to manage the various elements of distribution systems such as base supply systems, transportation methods, order processing, inventory control, etc.
42. My job requires the ability to manage or control maintenance and/or production processes (such as scheduling, component assembly, repair, etc.).

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Please use the following responses:



43. My job requires a knowledge of DOD involvement in international military systems programs such as the Grant Aid Program, Foreign Military Sales Program, international supply support arrangements, foreign military training, etc.
44. My job requires the ability to determine and/or evaluate the impact of reliability and maintainability on the acquisition and support of weapons systems and their components.
45. My job requires an understanding of quality control concepts such as specification compliance, standardization and evaluation programs, inspection routines, etc.
46. My job requires the ability to understand and/or analyze contractor proposals in such areas as cost estimation, program scheduling, control pricing techniques, contractor accounting techniques, etc.
47. In my job, it is necessary to take into consideration federal laws, regulations, or policies concerning social, environmental, or energy related topics such as OSHA, EPA, the current energy situation, etc.
48. My job requires the ability to develop models that will allow evaluating alternate courses of action prior to implementation.
49. My job requires the ability to understand the capabilities and limitations of the computer as an aid in the solution of management problems.
50. My job requires the ability to program a computer.
51. My job requires the ability to understand and/or analyze organizational climate and the behavior of individuals within that organization.
52. My job requires the ability to verbally inform, convince, and/or persuade individuals relative to ideas, decisions, and concepts.

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Please use the following responses:

Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree
A	B	C	D	E	F	G

53. My job requires the ability to communicate in writing in such a manner as to inform, convince and/or persuade individuals relative to ideas, decisions, and concepts (such as in the preparation of reports, correspondence, etc.).
54. My job requires an understanding of economic concepts relating to individual organizations such as marginal costs, time value of money, etc. (microeconomic concepts).
55. My job requires an understanding of societal economic concepts such as inflation, gross national product, balance of payments, etc. (macroeconomic concepts).
56. My job requires the ability to logically think through problems using analytical techniques such as the scientific method, etc.
57. My job does not require an advanced education such as that provided by the AFIT School of Systems and Logistics program.
58. My job is commensurate with my abilities.
59. The skills that I acquired from my AFIT School of Systems and Logistics education have proven useful in meeting the requirements of my job.
60. I could do my job effectively without an AFIT School of Systems and Logistics education.
61. My AFIT School of Systems and Logistics education might be better utilized in another duty assignment.
62. If you have any suggestions for improvement of the AFIT graduate education program, please use the space below and on the reverse to write them down.

THANK YOU FOR YOUR COOPERATION IN COMPLETING THIS QUESTIONNAIRE.

PLEASE ENCLOSE THE QUESTIONNAIRE AND THE MACHINE SCORABLE ANSWER SHEET IN THE RETURN ENVELOPE AND PLACE THE ENVELOPE IN OUTGOING OFFICIAL DISTRIBUTION.

SCN: 79-56 (Expires 30 Apr 79)

AFIT
SCHOOL OF SYSTEMS AND LOGISTICS
ALUMNI ROSTER INFORMATION SHEET

We need to update our alumni roster in order to maintain contact with you. Please provide the following information and return this form with the survey or mail it directly to AFIT/LSGR, Wright-Patterson AFB, Ohio 45433.

Private Act Statement: We are authorized by 10 U.S.C. Chapter 40, and E.O. 9397, Nov 43, to request information on this form. The principal purpose for use of this information is to update the AFIT School of Systems and Logistics Alumni Roster. We will routinely use this information to maintain correspondence and publication contact between the School and alumni. Your disclosure of this information is voluntary.

Name _____ SSAN _____

Home Mail Address _____

Business or Official Mail Address _____

Current Military Status: ☐ Active Duty ☐ Retired ☐ Non-applicable

Current Military Grade or Military Grade at retirement: _____

Military Service: ☐ USAF ☐ USA ☐ USN ☐ USMC ☐ Other

Current Federal Civil Service Status ☐ Active ☐ Retired ☐ Non-applicable

Current GS grade or GS grade at retirement, if applicable: _____

Graduate degree(s) earned?

APPENDIX B

PARAMETRIC VALUES FOR QUESTIONS 14-18 AND 22-61

TABLE 23
PARAMETRIC VALUES FOR QUESTIONS 14-18 AND 22-61

Question	Mean	Median	Mode	Std. Dev.	Variance
14	4.831	5.461	6.0	1.891	3.577
15	4.662	5.082	6.0	1.798	3.231
16	5.059	5.405	6.0	1.550	2.402
17	4.200	4.235	4.0	1.530	2.340
18	3.771	3.932	4.0	1.388	1.926
22	6.019	6.133	6.0	1.023	1.047
23	5.780	6.082	6.0	1.366	1.866
24 ^a	2.617	2.194	2.0	1.550	2.403
25	5.643	5.865	6.0	1.245	1.550
26 ^a	3.233	3.195	2.0	1.498	2.245
27	5.136	5.348	6.0	1.214	1.473
28	4.991	5.121	6.0	1.290	1.663
29	5.064	5.145	6.0	1.213	1.472
30	4.920	4.937	4.0	1.183	1.399
31	4.204	4.867	6.0	2.138	4.571
32	4.241	4.878	6.0	2.038	4.152
33	4.977	5.552	6.0	1.856	3.443
34	4.159	4.720	6.0	2.019	4.077
35	4.026	4.547	5.0	2.118	4.486
36	4.088	4.621	5.0	2.093	4.381
37	4.436	5.009	6.0	2.103	4.424
38	5.328	5.756	6.0	1.618	2.619
39	4.309	4.829	5.0	1.946	3.787
40	5.052	5.516	6.0	1.771	3.136
41	4.005	4.412	2.0	2.050	4.204
42	3.932	4.070	2.0	2.033	4.134

^aThese are negatively worded questions. Values were not reversed in this table but were reversed when computing the usefulness indices.

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AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCH0--ETC F/G 5/10
AN ANALYSIS OF THE USEFULNESS OF THE GRADUATE LOGISTICS PROGRAM--ETC(U)
JUN 79 K R BROWN, D M HOLLINGSWORTH

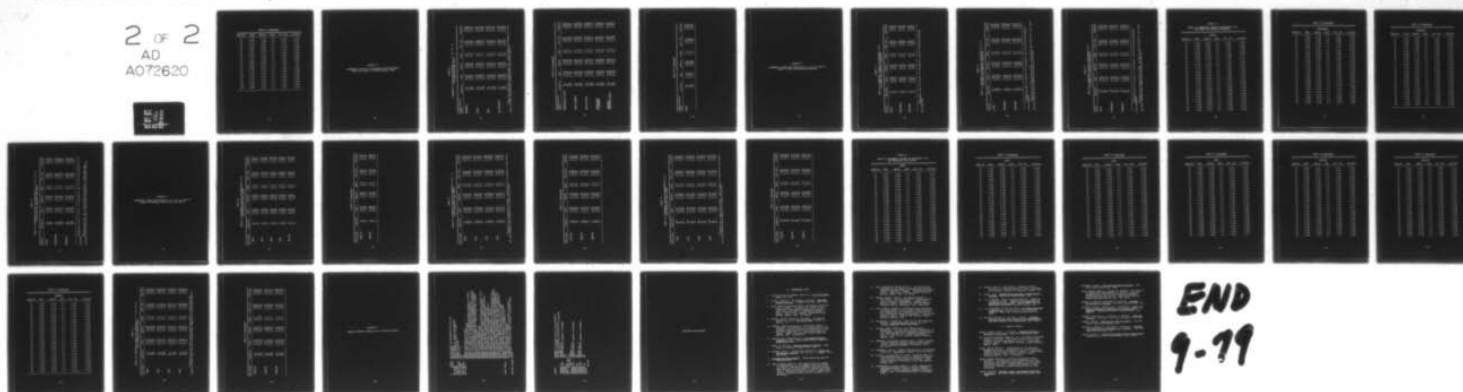
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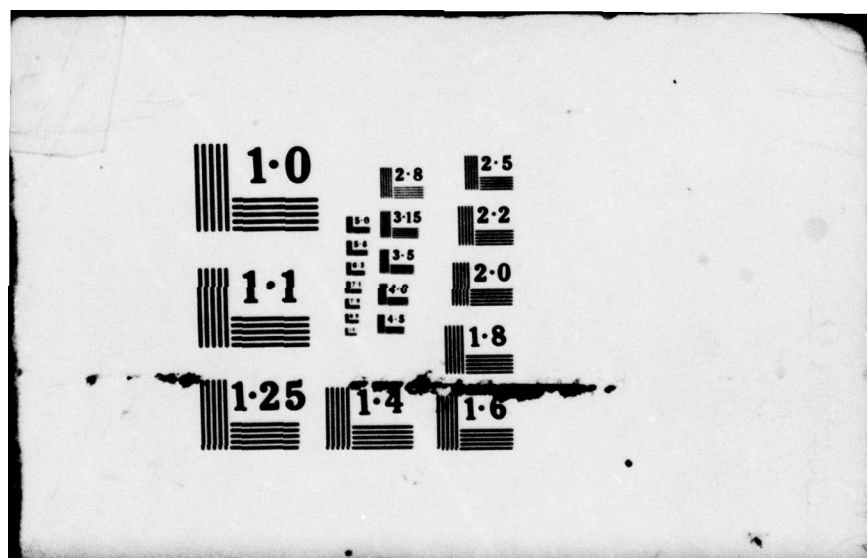


TABLE 23--Continued

Question	Mean	Median	Mode	Std. Dev.	Variance
43	3.564	3.196	2.0	2.092	4.375
44	3.626	3.500	2.0	2.057	4.230
45	4.319	4.825	5.0	1.938	3.754
46	3.796	3.689	2.0	2.142	4.586
47	4.324	4.833	5.0	1.974	3.896
48	3.653	3.500	2.0	1.955	3.823
49	4.833	5.273	6.0	1.873	3.509
50	2.555	1.986	1.0	1.722	2.966
51	5.650	6.006	7.0	1.511	2.283
52	6.468	6.689	7.0	.900	.811
53	6.454	6.701	7.0	.962	.926
54	3.998	4.535	5.0	1.975	3.902
55	3.593	3.578	2.0	1.918	3.680
56	5.334	5.729	6.0	1.651	2.725
57 ^a	3.789	3.463	2.0	1.984	3.936
58	4.219	4.719	6.0	2.057	4.233
59	5.490	5.831	6.0	1.503	2.260
60 ^a	4.492	4.811	6.0	1.631	2.662
61 ^a	4.887	5.366	6.0	1.823	3.323

APPENDIX C

PARAMETRIC VALUES FOR ASSIGNMENT APPROPRIATENESS
(INDEX G5) BASED ON ORGANIZATIONAL LEVEL

TABLE 24
PARAMETRIC VALUES FOR QUESTIONS 14, 57, 58, 60, 61
BY ORGANIZATIONAL LEVEL

Organizational Level	Question	Mean	Median	Mode	Std. Dev.	Variance
<u>Squadron</u>	14	4.528	5.111	6.0	1.973	3.813
	57a	4.533	4.958	6.0	1.981	3.296
	58	3.687	3.250	2.0	2.115	4.475
	60a	4.939	5.255	6.0	1.590	2.527
	61a	5.672	6.069	7.0	1.524	2.322
<u>Group</u>	14	4.829	5.583	6.0	1.801	3.245
	57a	3.700	3.409	3.0	1.636	2.677
	58	4.500	4.750	6.0	1.948	3.795
	60a	4.225	4.700	5.0	1.459	2.128
	61a	5.325	5.731	6.0	1.575	2.481
<u>Wing</u>	14	4.471	5.200	6.0	2.022	4.089
	57a	4.483	4.909	6.0	1.934	3.741
	58	3.989	4.200	6.0	2.105	4.430
	60a	5.069	5.545	6.0	1.523	2.321
	61a	5.609	6.058	7.0	1.580	2.497
<u>Air Division</u>	14	5.400	5.556	6.0	1.225	1.500
	57a	3.240	2.600	2.0	2.067	4.273
	58	4.360	5.250	6.0	2.215	4.907
	60a	4.520	4.778	5.0	1.610	2.593
	61a	3.920	4.000	4.0	2.100	4.410

^aThese are negatively worded questions. Values were not reversed in this table but were reversed when computing the usefulness indices.

TABLE 24--Continued

Organizational Level	Question	Mean	Median	Mode	Std. Dev.	Variance
<u>Numbered Air Force</u>						
	14	5.037	5.654	6.0	1.891	3.576
	57a	3.525	3.067	2.0	1.879	3.530
	80	4.228	4.740	6.0	2.032	4.128
	60a	4.352	4.618	6.0	1.613	2.602
	61a	4.247	4.600	6.0	2.000	4.001
<u>Major Command</u>						
	14	4.665	5.206	6.0	1.928	3.715
	57a	3.759	3.441	3.0	1.914	3.663
	58	4.312	4.971	6.0	2.039	4.157
	60a	4.482	4.833	6.0	1.600	2.559
	61a	4.782	5.506	6.0	1.718	2.952
<u>HQ Air Force</u>						
	14	4.895	5.500	6.0	2.024	4.097
	57a	3.105	2.500	1.0	1.970	3.881
	58	4.553	5.563	6.0	2.009	4.038
	60a	4.263	4.611	3.0	1.671	2.794
	61a	4.316	4.722	5.0	1.832	3.357
<u>Department of Defense</u>						
	14	5.167	5.643	6.0	1.689	2.853
	57a	2.944	3.000	4.0	1.305	1.703
	58	4.889	4.682	6.0	1.530	2.340
	60a	3.778	3.900	4.0	1.263	1.595
	61a	4.556	4.786	5.0	1.247	1.555
<u>Separate Operating Agency</u>						
	14	5.682	5.889	6.0	1.290	1.664
	57a	2.698	2.042	1.0	1.897	3.597
	58	5.093	5.769	6.0	1.962	3.848
	60a	3.651	3.333	2.0	1.798	3.233
	61a	4.349	4.571	6.0	1.938	3.756

TABLE 24--Continued

Organizational Level	Question	Mean	Median	Mode	Std. Dev.	Variance
<u>Other</u>	14	5.127	5.655	6.0	1.727	2.984
	57a	3.256	2.833	1.0	1.957	3.830
	58	4.449	5.056	6.0	1.898	3.601
	60a	3.974	3.944	3.0	1.562	2.441
	61a	4.577	4.800	5.0	1.687	2.845

APPENDIX D

PARAMETRIC VALUES FOR INDICES G1, G2, G3, G4, AND G5
BASED ON RATED AND NONRATED GRADUATES

TABLE 25

INDEX G1--PARAMETRIC VALUES FOR QUESTIONS 15-18
FOR RATED AND NONRATED GRADUATES^a

Rating	Question	Mean	Median	Mode	Std. Dev.	Variance
<u>Pilot</u>	15	4.378	4.895	6.0	1.927	3.713
	16	4.866	5.097	6.0	1.498	2.244
	17	4.157	4.267	4.0	1.461	2.134
	18	3.738	3.943	4.0	1.316	1.731
<u>Navigator</u>	15	4.627	4.952	5.0	1.826	3.334
	16	5.096	5.578	6.0	1.620	2.625
	17	4.060	4.161	4.0	1.501	2.252
	18	3.550	3.815	4.0	1.340	1.795
<u>Nonrated</u>	15	4.723	5.126	6.0	1.764	3.112
	16	5.093	5.446	6.0	1.550	2.403
	17	4.227	4.238	4.0	1.548	2.296
	18	3.805	3.944	4.0	1.407	1.979

^a Responses from 127 pilots, 83 navigators, and 635 nonrated graduates were analyzed.

TABLE 26

INDEX G2--PARAMETRIC VALUES FOR QUESTIONS 22-25, 59
FOR RATED AND NONRATED GRADUATES^a

Rating	Question	Mean	Median	Mode	Std. Dev.	Variance
<u>Pilot</u>	22	5.945	6.098	6.0	1.222	1.259
	23	5.709	5.973	6.0	1.340	1.795
	24 ^b	2.819	2.353	2.0	1.555	2.419
	25	5.724	5.866	6.0	1.067	1.138
	59	5.307	5.702	6.0	1.566	2.453
<u>Navigator</u>	22	5.880	6.034	6.0	1.120	1.254
	23	5.892	6.155	6.0	1.307	1.708
	24 ^b	2.795	2.213	2.0	1.658	2.750
	25	5.361	5.730	6.0	1.402	1.965
	59	4.963	5.540	6.0	1.856	3.443
<u>Nonrated</u>	22	6.052	6.153	6.0	0.988	0.977
	23	5.780	6.094	6.0	1.380	1.904
	24 ^b	2.553	2.160	2.0	1.531	2.345
	25	5.663	5.884	6.0	1.253	1.571
	59	5.595	5.887	6.0	1.422	2.023

^a Responses from 127 pilots, 83 navigators, and 635 nonrated graduates were analyzed.

^b Question 24 was negatively worded. Values were not reversed in this table but were reversed when computing the usefulness indices.

TABLE 27
INDEX G3--PARAMETRIC VALUES FOR QUESTIONS 26-30
FOR RATED AND NONRATED GRADUATES^a

Rating	Question	Mean	Median	Mode	Std. Dev.	Variance
<u>Pilot</u>	26 ^b	3.465	3.622	4.0	1.521	2.314
	27	5.126	5.386	6.0	1.234	1.524
	28	4.913	5.135	6.0	1.309	1.715
	29	5.126	5.153	6.0	1.016	1.032
	30	4.976	4.971	4.0	1.094	1.198
<u>Navigator</u>	26 ^b	3.349	3.292	2.0	1.526	2.328
	27	5.181	5.513	6.0	1.117	1.247
	28	5.120	5.421	6.0	1.152	1.327
	29	5.096	5.143	6.0	1.100	1.210
	30	4.904	4.920	4.0	1.066	1.137
<u>Nonrated</u>	26 ^b	3.172	3.079	2.0	1.487	2.212
	27	5.132	5.320	6.0	1.223	1.497
	28	4.989	5.074	6.0	1.303	1.699
	29	5.047	5.143	6.0	1.264	1.597
	30	4.910	4.932	4.0	1.215	1.476

^aResponses from 127 pilots, 83 navigators, and 635 nonrated graduates were analyzed.

^bQuestion 26 was negatively worded. Values are not reversed in the table but were reversed when computing the usefulness indices.

TABLE 28

INDEX G4--PARAMETRIC VALUES FOR QUESTIONS 31-56
FOR RATED AND NONRATED GRADUATES

Question	<u>Pilots</u>				
	Mean	Median	Mode	Std. Dev.	Variance
31	4.126	4.883	5.0	2.229	4.968
32	3.945	4.520	2.0	2.001	4.005
33	4.354	4.960	6.0	1.958	3.834
34	3.394	2.806	2.0	1.961	3.844
35	3.512	2.692	2.0	2.228	4.966
36	3.661	3.154	1.0	2.208	4.877
37	3.024	4.438	2.0	2.125	4.515
38	5.142	5.710	6.0	1.781	3.170
39	3.661	3.625	2.0	1.920	3.686
40	4.732	5.290	6.0	1.862	3.467
41	3.472	2.463	2.0	2.126	4.521
42	3.646	3.536	2.0	1.986	3.945
43	2.819	2.054	1.0	1.982	3.927
44	2.850	2.234	1.0	1.835	3.366
45	3.992	4.519	6.0	2.006	4.024
46	3.173	2.343	2.0	2.120	4.494
47	4.197	4.871	6.0	2.020	4.080
48	3.213	2.588	2.0	1.828	3.343
49	4.260	4.784	5.0	1.985	3.940
50	2.126	1.574	1.0	1.485	2.206
51	5.661	6.108	7.0	1.624	2.638
52	6.323	6.580	7.0	1.105	1.220
53	6.244	6.538	7.0	1.146	1.313
54	3.441	3.000	2.0	1.995	3.979
55	3.039	2.333	2.0	1.875	3.514
56	4.952	5.431	6.0	1.828	3.342

TABLE 28--Continued

Question	<u>Navigators</u>				
	Mean	Median	Mode	Std. Dev.	Variance
31	3.639	3.750	1.0	2.201	4.843
32	3.843	4.588	6.0	2.086	4.353
33	4.687	5.225	6.0	2.006	4.023
34	3.530	3.188	2.0	1.896	3.594
35	3.663	3.200	1.0	2.221	4.934
36	3.711	3.625	2.0	2.167	4.696
37	3.831	4.000	2.0	2.262	5.118
38	5.145	5.683	6.0	1.822	3.320
39	3.855	4.143	5.0	1.939	3.759
40	4.566	5.063	5.0	1.964	3.858
41	3.566	2.917	2.0	2.114	4.468
42	3.410	2.714	2.0	2.048	4.196
43	3.120	2.295	1.0	2.009	4.034
44	3.120	2.341	1.0	1.959	3.839
45	4.000	4.579	5.0	2.000	4.000
46	3.205	2.391	2.0	2.023	4.092
47	3.964	4.528	5.0	2.075	4.304
48	3.048	2.327	2.0	1.912	3.656
49	3.892	4.438	5.0	2.078	4.317
50	1.988	1.641	1.0	1.375	1.890
51	5.566	6.023	7.0	1.654	1.736
52	6.277	6.617	7.0	1.172	1.373
53	6.193	6.598	7.0	1.348	1.816
54	3.386	2.938	2.0	1.950	3.801
55	3.060	2.391	2.0	1.863	3.472
56	4.687	5.059	6.0	1.912	3.657

TABLE 28--Continued

Question	<u>Nonrated</u>				
	Mean	Median	Mode	Std. Dev.	Variance
31	4.293	4.918	6.0	2.102	4.419
32	4.352	4.976	6.0	2.029	4.118
33	5.140	5.658	6.0	1.785	3.186
34	4.394	4.966	6.0	1.993	3.974
35	4.177	4.696	5.0	2.062	4.253
36	4.222	4.745	5.0	2.045	4.183
37	4.598	5.172	6.0	2.055	4.222
38	5.390	5.776	6.0	1.553	2.412
39	4.498	4.991	5.0	1.917	3.675
40	5.180	5.606	6.0	1.708	2.919
41	4.169	4.636	5.0	2.003	4.001
42	4.058	4.347	2.0	2.027	4.109
43	3.772	4.014	2.0	2.084	4.341
44	3.848	4.211	5.0	2.064	4.262
45	4.427	4.905	5.0	1.906	3.633
46	3.998	4.447	2.0	2.126	4.518
47	4.397	4.862	5.0	1.948	3.793
48	3.821	3.973	2.0	1.959	3.836
49	5.071	5.500	6.0	1.758	3.090
50	2.715	2.122	1.0	1.778	3.161
51	5.658	5.984	7.0	1.469	2.159
52	6.522	6.716	7.0	0.804	0.646
53	6.530	6.739	7.0	0.844	0.712
54	4.190	4.700	5.0	1.940	3.764
55	3.774	3.007	5.0	1.903	3.626
56	5.495	5.833	6.0	1.543	2.380

TABLE 29

INDEX G5--PARAMETRIC VALUES FOR QUESTIONS 14, 57, 58, 60, 61
FOR RATED AND NONRATED GRADUATES^a

Rating	Question	Mean	Median	Mode	Std. Dev.	Variance
<u>Pilot</u>	14	4.835	5.566	6.0	2.050	4.203
	57b	4.701	5.114	6.0	1.874	3.513
	58	3.732	3.467	6.0	2.102	4.420
	60b	4.858	5.354	6.0	1.622	2.631
<u>Navigators</u>	14	5.193	5.650	6.0	1.685	2.840
	57b	4.422	4.778	6.0	2.084	4.344
	58	3.671	3.278	1.0	2.153	4.643
	60b	4.723	5.294	6.0	1.734	3.008
	61b	5.169	5.594	7.0	1.759	3.093
<u>Nonrated</u>	14	4.783	5.392	6.0	1.881	3.539
	57b	3.517	3.125	2.0	1.920	3.686
	58	4.388	5.044	6.0	2.012	4.014
	60b	4.388	4.682	5.0	1.608	2.586
	61b	4.756	5.170	6.0	1.818	3.303

^a Responses from 127 pilots, 83 navigators, and 635 nonrated graduates were analyzed.

^b Questions 57, 60, and 61 were negatively worded. Values were not reversed in this table but were reversed when computing the usefulness indices.

APPENDIX E

PARAMETRIC VALUES FOR INDICES G1, G2, G3, G4, AND G5
BASED ON DIFFERENT GRADUATING YEAR GROUPS

TABLE 30
INDEX G1--PARAMETRIC VALUES FOR QUESTIONS 15-18
FOR GRADUATING YEAR GROUPS

Year Group	Question	Mean	Median	Mode	Std. Dev.	Variance
<u>1978</u>	15	4.402	4.694	5.0	2.003	4.014
	16	5.103	5.205	6.0	1.287	1.656
	17	4.680	4.768	4.0	1.469	2.157
	18	4.167	4.167	4.0	1.397	1.951
<u>1977</u>	15	4.416	4.528	4.0	1.739	3.025
	16	5.129	5.280	6.0	1.197	1.433
	17	4.673	4.563	4.0	1.379	1.902
	18	4.010	4.026	4.0	1.299	1.687
<u>1976</u>	15	4.491	5.050	6.0	1.827	3.336
	16	4.972	5.250	6.0	1.519	2.308
	17	4.463	4.472	4.0	1.462	2.139
	18	3.841	4.030	4.0	1.375	1.890
<u>1975</u>	15	4.300	4.853	6.0	1.969	3.875
	16	5.233	5.639	6.0	1.484	2.203
	17	4.044	4.106	4.0	1.564	3.447
	18	3.784	3.926	4.0	1.326	1.757
<u>1971-74</u>	15	4.786	5.279	6.0	1.819	3.310
	16	4.937	5.440	6.0	1.765	3.116
	17	4.014	4.106	4.0	1.522	2.317
	18	3.640	3.835	4.0	1.398	1.955

TABLE 30--Continued

Year Group	Question	Mean	Median	Mode	Std. Dev.	Variance
<u>1967-70</u>	15	4.987	5.194	5.0	1.433	2.053
	16	5.171	5.446	6.0	1.508	2.275
	17	3.809	3.941	4.0	1.517	2.301
	18	3.517	3.778	4.0	1.390	1.931
<u>1963-66</u>	15	6.000	6.300	6.0	1.279	1.636
	16	5.083	5.750	6.0	1.975	3.908
	17	4.500	4.500	6.0	1.834	3.364
	18	4.167	4.500	5.0	1.528	2.333

TABLE 31

INDEX G2--PARAMETRIC VALUES FOR QUESTIONS 22-25, 59
FOR GRADUATING YEAR GROUPS

Year Group	Question	Mean	Median	Mode	Std. Dev.	Variance
<u>1978</u>	22	5.866	6.047	6.0	1.204	1.451
	23	5.381	5.750	7.0	1.623	2.634
	24 ^a	3.010	2.452	2.0	1.806	3.260
	25	5.536	5.724	6.0	1.339	1.793
	59	5.196	5.727	6.0	1.783	3.180
<u>1977</u>	22	6.178	6.196	6.0	0.740	0.548
	23	5.792	6.036	6.0	1.235	1.526
	24 ^a	2.545	2.244	2.0	1.315	1.730
	25	5.485	5.810	6.0	1.285	1.652
	59	5.604	5.738	6.0	1.150	1.322
<u>1976</u>	22	5.917	6.093	6.0	1.177	1.386
	23	5.833	6.032	6.0	1.204	1.449
	24 ^a	2.657	2.188	2.0	1.560	2.433
	25	5.861	5.949	6.0	0.961	0.924
	59	5.531	5.844	6.0	1.396	1.949
<u>1975</u>	22	5.978	6.141	6.0	1.101	1.213
	23	5.667	6.000	6.0	1.413	2.045
	24 ^a	3.011	2.500	2.0	1.808	3.270
	25	5.411	5.735	6.0	1.476	2.177
	59	5.213	5.650	6.0	1.682	2.829

^a Question 24 is negatively worded. Values were not reversed in this table but were reversed when computing the usefulness indices.

TABLE 31--Continued

Year Group	Question	Mean	Median	Mode	Std. Dev.	Variance
<u>1971-74</u>	22	5.989	6.122	6.0	1.060	1.123
	23	5.768	6.127	6.0	1.464	2.143
	24 ^a	2.568	2.129	2.0	1.585	2.514
	25	5.618	5.859	6.0	1.299	1.688
	59	5.449	5.850	6.0	1.624	2.638
<u>1967-70</u>	22	6.125	6.154	6.0	0.808	0.653
	23	6.007	6.181	6.0	1.113	1.238
	24 ^a	2.316	2.100	2.0	1.198	1.436
	25	5.796	5.921	6.0	1.012	1.024
	59	5.730	5.933	6.0	1.196	1.430
<u>1963-66</u>	22	6.500	6.643	7.0	0.674	0.455
	23	6.667	6.750	7.0	0.492	0.242
	24 ^a	1.667	1.667	2.0	0.651	0.424
	25	6.250	6.643	7.0	1.422	2.023
	59	6.500	6.750	7.0	0.798	0.636

TABLE 32
INDEX G3--PARAMETRIC VALUES FOR QUESTIONS 26-30
FOR GRADUATING YEAR GROUPS

Year Group	Question	Mean	Median	Mode	Std. Dev.	Variance
<u>1978</u>	26 ^a	3.258	2.933	2.0	1.697	2.881
	27	5.031	5.348	6.0	1.388	1.926
	28	4.814	4.906	6.0	1.409	1.986
	29	5.268	5.448	6.0	1.279	1.636
	30	4.897	5.061	5.0	1.319	1.739
<u>1977</u>	26 ^a	2.990	2.489	2.0	1.308	1.710
	27	5.317	5.627	6.0	1.058	1.119
	28	5.198	5.511	6.0	1.114	1.240
	29	5.485	5.698	6.0	0.986	0.972
	30	5.109	5.103	5.0	0.937	0.878
<u>1976</u>	26 ^a	3.287	3.167	2.0	1.466	2.150
	27	5.185	5.409	6.0	1.145	1.311
	28	5.037	5.241	6.0	1.245	1.550
	29	5.204	5.357	6.0	1.109	1.229
	30	5.009	5.068	5.0	1.081	1.168
<u>1975</u>	26 ^a	3.444	3.638	4.0	1.573	2.474
	27	5.033	5.237	6.0	1.311	1.718
	28	5.022	5.222	6.0	1.332	1.775
	29	5.078	5.200	6.0	1.247	1.556
	30	4.800	4.759	4.0	1.182	1.398

^aQuestion 26 is negatively worded. Values were not reversed in this table but were reversed when computing the usefulness indices.

TABLE 32--Continued

Year Group	Question	Mean	Median	Mode	Std. Dev.	Variance
<u>1971-74</u>	26 ^a	3.221	3.256	4.0	1.440	2.074
	27	5.151	5.319	6.0	1.176	1.382
	28	5.011	5.091	4.0	1.290	1.665
	29	4.940	4.914	4.0	1.202	1.444
	30	4.905	4.864	4.0	1.187	1.410
<u>1967-70</u>	26 ^a	3.276	3.536	4.0	1.528	2.334
	27	5.053	5.063	4.0	1.217	1.481
	28	4.855	4.871	4.0	1.324	1.754
	29	4.790	4.534	4.0	1.258	1.582
	30	4.816	4.758	4.0	1.279	1.635
<u>1963-66</u>	26 ^a	2.750	2.000	1.0	1.960	3.841
	27	5.500	6.000	6.0	1.624	2.636
	28	5.250	5.500	4.0	1.215	1.477
	29	5.167	5.500	4.0	1.586	2.515
	30	5.250	4.500	4.0	1.357	1.841

TABLE 33

INDEX G4--PARAMETRIC VALUES FOR QUESTIONS 31-56
FOR GRADUATING YEAR GROUPS

<u>1978</u>					
Question	Mean	Median	Mode	Std. Dev.	Variance
31	4.247	4.972	6.0	2.273	5.167
32	4.041	4.600	2.0	2.231	4.977
33	4.557	5.135	5.0	2.041	4.166
34	3.897	4.519	5.0	1.912	3.656
35	4.103	4.647	7.0	2.252	5.073
36	4.155	4.706	7.0	2.228	4.965
37	4.464	5.031	7.0	2.204	4.855
38	5.289	5.714	6.0	1.652	2.728
39	4.021	4.526	2.0	2.061	4.250
40	4.938	5.440	6.0	1.853	3.434
41	4.082	4.525	5.0	2.100	4.410
42	3.959	3.154	1.0	2.056	4.227
43	3.175	2.173	1.0	2.213	4.896
44	3.010	2.212	1.0	2.023	4.094
45	4.412	4.942	5.0	1.919	3.682
46	3.701	3.063	2.0	2.292	5.253
47	4.494	4.893	7.0	2.102	4.419
48	3.526	3.250	1.0	2.077	4.314
49	4.515	5.095	5.0	2.112	4.461
50	2.835	2.068	1.0	1.988	3.952
51	5.577	5.926	7.0	1.573	2.476
52	6.433	6.678	7.0	0.978	0.956
53	6.330	6.664	7.0	1.170	1.369
54	3.701	3.917	1.0	2.204	4.858
55	3.526	3.429	1.0	2.021	4.085
56	5.113	5.552	6.0	1.773	3.143

TABLE 33--Continued

<u>1977</u>					
Question	Mean	Median	Mode	Std. Dev.	Variance
31	4.307	4.952	6.0	2.134	4.555
32	4.168	4.667	6.0	2.030	4.121
33	4.901	5.407	6.0	1.786	3.190
34	3.564	2.950	2.0	1.931	3.728
35	3.990	3.800	7.0	2.360	5.570
36	4.277	4.906	7.0	2.254	5.082
37	4.446	4.969	7.0	2.109	4.450
38	5.386	5.769	6.0	1.543	2.379
39	3.010	4.250	2.0	1.910	3.650
40	5.089	5.482	6.0	1.625	2.642
41	3.792	3.333	2.0	2.056	4.226
42	4.079	4.438	5.0	2.082	4.334
43	3.020	2.200	2.0	1.990	3.960
44	3.188	2.303	2.0	2.038	4.154
45	4.257	4.667	5.0	1.927	3.713
47	3.683	3.250	1.0	2.245	5.039
47	4.594	5.114	6.0	1.919	3.684
48	3.139	2.429	2.0	1.806	3.261
49	4.743	5.114	7.0	1.917	3.673
50	2.327	1.732	1.0	1.692	2.862
51	6.196	6.196	7.0	1.557	2.423
52	6.495	6.698	7.0	0.867	0.752
53	6.564	6.723	7.0	0.727	0.528
54	3.465	3.313	2.0	1.890	3.571
55	3.188	2.667	2.0	1.782	3.174
56	5.260	5.707	6.0	1.703	2.901

TABLE 33--Continued

Question	<u>1976</u>				
	Mean	Median	Mode	Std. Dev.	Variance
31	4.333	5.017	5.0	2.051	4.206
32	4.287	4.864	6.0	1.963	3.851
33	4.880	5.500	6.0	1.771	3.135
34	4.213	4.763	6.0	2.010	4.038
35	4.306	4.938	6.0	2.159	4.663
36	4.426	5.056	6.0	2.083	4.340
37	4.620	5.167	7.0	2.090	4.369
38	5.269	5.709	6.0	1.550	2.404
39	4.417	5.855	5.0	1.762	3.105
40	4.991	5.403	6.0	1.655	2.738
41	4.028	4.409	2.0	1.974	3.896
42	4.037	4.250	2.0	2.014	4.055
43	3.037	2.194	1.0	2.042	4.168
44	3.617	3.444	1.0	2.109	4.446
45	4.514	4.897	5.0	1.777	3.158
46	4.093	4.594	2.0	2.187	4.784
47	4.383	4.854	6.0	1.877	3.522
48	3.477	3.031	2.0	1.885	3.554
49	4.888	5.266	5.0	1.717	2.950
50	2.607	2.000	1.0	1.763	3.109
51	5.505	5.803	6.0	1.450	2.101
52	6.374	6.578	7.0	0.927	0.859
53	6.346	6.527	7.0	0.912	0.832
54	4.028	4.286	2.0	1.940	3.763
55	3.949	3.417	2.0	1.910	3.649
56	5.467	5.708	6.0	1.396	1.949

TABLE 33--Continued

<u>1975</u>					
Question	Mean	Median	Mode	Std. Dev.	Variance
31	3.809	4.000	2.0	2.220	4.929
32	3.966	4.705	5.0	2.097	4.397
33	4.685	5.294	6.0	2.003	4.014
34	4.146	4.789	5.0	2.114	4.467
35	3.719	3.600	2.0	2.127	4.522
36	3.955	4.250	5.0	2.028	4.112
37	4.202	4.765	6.0	2.084	4.345
38	5.371	5.839	6.0	1.668	2.781
39	4.124	4.684	5.0	2.066	4.269
40	5.034	5.477	6.0	1.748	3.056
41	3.011	4.417	2.0	2.081	4.309
42	4.169	4.800	6.0	2.181	4.755
43	3.674	3.600	2.0	2.152	4.631
44	3.528	3.143	1.0	2.138	4.570
45	4.753	5.238	6.0	1.873	3.506
46	3.629	3.650	1.0	2.107	4.441
47	4.506	5.000	5.0	1.972	3.889
48	3.899	4.250	5.0	1.954	3.819
49	4.674	5.104	5.0	1.882	3.540
50	2.506	1.920	1.0	1.772	3.139
51	5.719	6.043	7.0	1.390	1.932
52	6.483	6.676	7.0	0.813	0.662
53	6.303	6.644	7.0	1.122	1.259
54	3.966	4.565	5.0	1.991	3.965
55	3.742	4.000	5.0	1.957	3.830
56	5.292	5.690	6.0	1.667	2.777

TABLE 33--Continued

<u>1971-74</u>					
Question	Mean	Median	Mode	Std. Dev.	Variance
31	4.074	4.727	6.0	2.167	4.695
32	4.165	4.875	6.0	2.057	4.230
33	4.972	5.518	6.0	1.876	3.520
34	4.182	4.772	6.0	2.068	4.276
35	3.818	4.031	2.0	2.070	4.283
36	3.775	3.769	2.0	2.077	4.316
37	4.214	4.869	5.0	2.154	4.641
38	5.277	5.755	6.0	1.711	2.926
39	4.249	4.858	5.0	1.991	3.962
40	5.000	5.555	6.0	1.910	3.648
41	3.933	4.400	2.0	2.128	4.527
42	3.786	3.768	2.0	2.040	4.162
43	3.690	4.136	5.0	2.051	4.208
44	3.711	3.974	5.0	2.042	4.171
45	4.067	4.640	6.0	2.052	4.211
46	3.560	3.045	2.0	2.102	4.417
47	4.123	4.708	5.0	2.046	4.186
48	4.623	3.458	2.0	1.972	3.889
49	4.739	5.222	5.0	1.916	3.670
50	2.454	1.893	1.0	1.698	2.885
51	5.680	6.068	7.0	1.525	2.325
52	6.482	6.728	7.0	0.960	0.922
53	6.486	6.575	7.0	1.024	1.049
54	4.102	4.657	5.0	1.970	3.880
55	3.560	3.389	5.0	1.939	3.760
56	5.306	5.773	6.0	1.717	2.948

TABLE 33--Continued

<u>1967-70</u>					
Question	Mean	Median	Mode	Std. Dev.	Variance
31	4.454	5.025	5.0	1.986	3.45
32	4.638	5.125	5.0	1.861	3.464
33	5.539	5.948	6.0	1.556	2.422
34	4.559	5.071	6.0	1.911	3.562
35	4.309	4.750	5.0	1.867	3.487
36	4.309	4.773	5.0	1.923	3.698
37	4.770	5.250	5.0	1.927	3.715
38	5.342	5.700	6.0	1.532	2.346
39	4.743	5.100	5.0	1.800	3.238
40	4.204	5.544	6.0	1.645	2.706
41	4.132	4.531	2.0	1.918	3.678
42	3.862	3.750	2.0	1.902	3.617
43	4.178	4.643	2.0	1.919	3.683
44	4.184	4.643	5.0	1.861	3.463
45	4.322	4.773	5.0	1.840	3.385
46	4.217	4.647	5.0	1.970	3.880
47	4.224	4.738	5.0	1.817	3.301
48	4.046	4.524	5.0	1.878	3.528
49	5.276	5.600	6.0	1.624	2.638
50	2.711	2.268	2.0	1.512	2.287
51	5.566	5.895	7.0	1.564	2.446
52	6.480	6.674	7.0	0.814	0.662
53	6.520	6.691	7.0	0.763	0.582
54	4.211	4.717	5.0	1.822	3.320
55	3.836	4.250	5.0	1.829	3.344
56	5.447	5.744	6.0	1.564	2.448

TABLE 33--Continued

<u>1963-66</u>					
Question	Mean	Median	Mode	Std. Dev.	Variance
31	4.667	5.500	6.0	2.229	4.970
32	4.833	5.500	6.0	2.038	4.152
33	5.083	6.000	6.0	2.234	4.992
34	5.250	5.750	6.0	1.913	3.659
35	4.833	5.500	6.0	2.082	4.333
36	4.500	4.500	6.0	1.977	3.909
37	5.250	5.500	5.0	1.960	3.841
38	6.417	6.500	7.0	0.669	0.447
39	5.500	5.833	7.0	1.624	2.636
40	5.667	6.100	6.0	1.723	2.970
41	5.000	5.500	6.0	1.859	3.455
42	4.167	3.500	2.0	2.125	4.515
43	4.417	5.000	7.0	2.539	6.447
44	4.000	4.833	1.0	2.412	5.181
45	5.083	5.300	5.0	1.881	3.538
46	4.333	5.000	5.0	2.229	4.970
47	4.833	5.500	5.0	2.250	5.061
48	4.500	4.833	7.0	2.316	5.364
49	5.417	6.100	6.0	2.021	4.083
50	2.500	1.500	1.0	1.931	3.727
51	6.417	6.643	7.0	0.793	0.629
52	6.750	6.833	7.0	0.452	0.205
53	7.000	7.000	7.0	0.000	0.000
54	5.667	6.167	7.0	1.670	2.788
55	5.000	5.250	5.0	1.907	3.636
56	6.083	6.750	7.0	1.621	2.629

TABLE 34

INDEX G5--PARAMETRIC VALUES FOR QUESTIONS 14, 57, 58, 60, 61
FOR GRADUATING YEAR GROUPS

Year Group	Question	Mean	Median	Mode	Std. Dev.	Variance
<u>1978</u>	14	4.887	5.646	7.0	2.101	4.414
	57a	4.237	4.083	7.0	2.120	4.495
	58	3.825	3.464	2.0	2.097	4.396
	60a	4.722	5.069	5.0	1.675	2.807
	61a	4.918	5.696	7.0	2.125	4.514
<u>1977</u>	14	4.426	4.846	6.0	1.977	3.907
	57a	4.119	4.036	6.0	1.872	3.506
	58	3.871	3.583	2.0	1.927	3.713
	60a	4.733	5.104	6.0	1.469	2.158
	61a	5.119	5.653	6.0	1.663	2.766
<u>1976</u>	14	5.102	5.714	6.0	1.824	3.326
	57a	4.093	4.313	6.0	1.916	3.670
	58	4.037	4.375	6.0	1.971	3.885
	60a	4.551	4.979	6.0	1.722	2.967
	61a	4.794	5.263	6.0	1.774	3.146
<u>1975</u>	14	4.767	5.533	6.0	2.039	4.158
	57a	3.798	3.450	2.0	2.128	4.527
	58	4.135	4.429	6.0	2.165	5.686
	60a	4.775	5.174	6.0	1.684	2.835
	61a	5.146	5.609	7.0	1.800	3.240

^aQuestions 57, 60, and 61 were negatively worded. Values were not reversed in this table but were reversed when computing the usefulness indices.

TABLE 34--Continued

Year Group	Question	Mean	Median	Mode	Std. Dev.	Variance
<u>1971-74</u>	14	4.772	5.329	6.0	1.888	3.564
	57a	3.782	3.415	2.0	1.988	3.952
	58	4.240	4.839	6.0	2.122	4.502
	60a	4.479	4.713	6.00	1.629	2.653
	61a	5.106	5.614	6.0	1.766	3.120
<u>1967-70</u>	14	4.967	5.500	6.0	1.625	2.641
	57a	3.151	2.848	2.0	1.714	2.937
	58	4.822	5.664	6.0	1.863	3.472
	60a	4.039	4.196	5.0	1.482	2.197
	61a	4.250	4.357	4.0	1.720	2.957
<u>1963-66</u>	14	5.500	5.833	7.0	1.732	3.000
	57a	2.583	1.500	1.0	2.314	5.356
	58	4.417	5.500	6.0	2.275	5.174
	60a	4.000	4.500	1.0	2.216	4.909
	61a	4.500	4.500	4.0	2.067	4.273

APPENDIX F
SAMPLE COMPUTER PROGRAM USED IN SURVEY ANALYSIS

\$ IDENT WP1108,BROWN HOLLINGSWORTH AFIT/LSG 78A
 \$ SELECT SPSS/BIGSPSS
 RUN NAME THESIS ANALYSIS: CURRICULUM RELEVANCY
 FILE NAME USEFUL2(RATED BY USEFUL & COURSE)
 VARIABLE LIST QUES001 TO QUES061
 INPUT FORMAT FIXED (61A1)
 N OF CASES 845
 INPUT MEDIUM CARD
 VAR LABELS QUES009,AERONAUTICAL RATING/
 QUES014,GRAD EDUCATION CONSIDERED/
 QUES022,LSG USEFUL TO USAF/QUES023,ENCOURAGE OTHERS TO ATTEND/
 QUES024,OF LITTLE USE ON JOB/QUES025,BETTER EQUIPPED/
 QUES026,LSG EDUCATION OF LITTLE VALUE OJT/QUES027,LSG EDUCATION
 USEFUL TO USAF/QUES028,WOULD ENCOURAGE SUBORDINATES TO ATTEND/
 QUES029,GRADLOG PROGRAM ENHANCES CAREER/QUES030,GRAD BETTER
 EQUIPPED TO SOLVE PROBLEMS/
 QUES031,ACCOUNTING/QUES032,BQM/
 QUES033,RESEARCH/QUES034,QUANT DECISIONS/QUES035,CONTRACT LAW/
 QUES036,CONTRACT MGT/QUES037,CONTRACT & ACQUISITION MGT/
 QUES038,ORG & MGT/QUES039,STATISTICS/QUES040,FINANCIAL MGT/
 QUES041,DISTRIBUTION MGT/QUES042,PRODUCTION MGT/
 QUES043,INTERNATIONAL LOGISTICS/QUES044,RELIABILITY/
 QUES045,QUALITY CONTROL/QUES046,COST & PRICING/
 QUES047,ENVIRONMENTAL PLANNING/QUES048,SIMULATION/QUES049,MIS/
 QUES050,COMPUTER PROGRAMMING/QUES051,ORG BEHAVIOR/QUES052,SPEECH/
 QUES053,WRITING/QUES054,MICROECONOMICS/QUES055,MACROECONOMICS/
 QUES056,ANALYTICAL TECHNIQUES/QUES057,JOB DOESN'T REQUIRE LSG
 EDUCATN/QUES058,JOB COMMENSURATE WITH ABILITIES/QUES059,LSG
 SKILL USEFUL/QUES060,CAN DO EFFECTIVE JOB W-O LSG/
 QUES061,LSG EDUCATION BETTER IN ANOTHER ASSIGNMENT
 QUES009 (1)PILOT (2)NAVIGATOR (3)NONRATED (4)
 NOT APPLICABLE/QUES014 TO QUES061
 (1)STRONGLY DISAGREE (2)DISAGREE (3)SLIGHTLY DISAGREE
 (4)UNDECIDED (5)SLIGHTLY AGREE (6)AGREE (7)STRONGLY AGREE
 MISSING VALUES ALL(0)

VALUE LABELS

```

RECODE      QUES009 ('A'=1) ('B'=2) ('C', 'D'=3) (ELSE=0)
            QUES014 TO QUES061 ('A'=1) ('B'=2)
            ('C'=3) ('D'=4) ('E'=5) ('F'=6) ('G'=7) (ELSE=0)
            (QUES009 EQ 1)
*SELECT IF  GENERAL=QUES014,QUES022 TO QUES061
FREQUENCIES 3,8
OPTIONS      ALL
STATISTICS
READ INPUT DATA
$ SELECT DATA5
$SELECT IF  (QUES009 EQ 2)
FREQUENCIES GENERAL=QUES014,QUES022 TO QUES061
OPTIONS      3,8
STATISTICS  ALL
*SELECT IF  (QUES009 EQ 3)
FREQUENCIES GENERAL=QUES014,QUES022 TO QUES061
OPTIONS      3,8
STATISTICS  ALL
FINISH
$          ENDJOB

```

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